MID-TERM ASSESSMENT OF THE NATIONAL PEACE CORPS ASSOCIATION EBOLA RELIEF FUND: DETERMINING EFFECTIVENESS AND FUTURE DIRECTION

By

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ABSTRACT

Public Health Relevance: This evaluation seeks to analyze and discuss the effectiveness of a novel model of fundraising and grant management to aid in the resolution of a large epidemic.

On March 23, 2014 the World Health Organization (WHO) announced the outbreak of Ebolavirus in Guinea, which continued to spread and overwhelm the neighboring countries Liberia and Sierra Leone. Ebolavirus is a hemorrhagic virus with a case fatality rate of 50-70%. In September of 2015, the National Peace Corps Association (NPCA) formed the Ebola Relief Fund (ERF) in response to members' desires to participate in the international relief effort. Between October and February, the ERF collected 100 proposals and awarded 25 grants, totaling approximately $75,000. Presently, the ERF is midway through its operations having completed Round 1 programs, Round 2 programs are nearing completion, and funds were recently disbursed for Round 3. The objectives of this report are broadly to 1.) Assess the effectiveness of the ERF at soliciting high quality program proposals, as well as the impact of selected programs and 2.) To determine the future of ERF as the outbreak is being rapidly controlled. Qualitative reviews of participating organizations' initial proposal critiques, mid-term reports, and final reports were conducted to assess overall quality of grants submitted, compliance with proposed funding requests, and success of funded programs. A comprehensive review of news articles

published between the dates of February 1, 2015 and April 1, 2015 was conducted to make recommendations regarding the future direction of the ERF. The evaluation found that ERF had been able to elicit proposals of sufficient quality to warrant funding and the organizations were highly compliant and successful in the delivery of their programs. Moving forward the ERF should consider changing the criteria used to select grants. If grants will continue to be awarded in the future to assist in the Ebola effort, applicants should only be limited to parts of Guinea and Sierra Leone still fighting the outbreak. A better use of funds may be to invest in longer term development efforts in the three countries to assist with recovery from the epidemic.

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PREFACE

First and foremost, special thanks and recognition must be given to The Legion Foundation and its president, James Mulvoy. Without their gracious financial support throughout the pursuit of my MPH degree at the University of Pittsburgh, none of this would be possible. I can only hope this work is the first of many projects that will continue to justify their investment in me.

Secondly, without the mentorship and tutelage of Russell Morgan and the opportunity provided by Glenn Blumhorst, NPCA President, Anne Baker, NPCA Vice President, and the Ebola Relief Fund Steering committee, this amazing experience would not have been possible. Thank you so much for the opportunity to participate in the Ebola Relief Fund.

1.0 INTRODUCTION

On March 23, 2014 the World Health Organization (WHO) publicly announced the outbreak of Ebolavirus, the Zaire Species, on their website. (World Health Organization 2015) By that date, 49 cases and 29 deaths were officially reported in Guinea, the country of origin for the 2014-2015 Ebola epidemic. WHO officials identified the index case retrospectively as an 18 month old boy that resided in the Forest Region of Guinea in a small village of 31 households. He developed an illness described by witnesses as having fever, black stool, and vomiting and died two days later.

By the second week of January, many of the child's family members, local traditional healers, and health professionals had fallen ill and the virus had spread to many of the surrounding subdistricts. (World Health Organization 2015) The Meliandou health post notified district officials concerning five rapid deaths resulting from diarrhea, vomiting, and severe dehydration. Investigations by district health officials assumed it was cholera, but no official conclusions were reached. A secondary investigation by Medecins Sans Frontieres (MSF) showed bacteria in patient samples after microscopic examination, which further supported the cholera diagnosis. People in the affected communities continued to fall ill and die after the investigation. These cases were not reported nor investigated further.

On February 1, 2014, an infected member of the index case's family sought treatment in a hospital in Conakry and died four days later. (World Health Organization 2015) The hospital

staff did not use the proper precautionary measures for themselves or other patients because they were unaware of the possible Ebola risk, since Ebola had previously never occurred in this region of Africa. By the end of the month, Ebola had spread to the prefectures of Macenta, Baladou, Nzerekore, and Farako, as well as to several villages and cities along the routes to these destinations.

An alert was issued on March 13th, 2014 by the Ministry of Health about an unidentified disease and the following day a joint investigation between the Ministry of Health, WHO Regional Office for Africa (AFRO), and MSF began.(World Health Organization 2015) The investigation identified links between multiple sites and Gueckedou City, the original site of the outbreak. On March 21st, the Institut Pasteur in Lyon, France identified the infectious agent as a filiovirus and a day later confirmed that it was Ebolavirus Zaire species. The announcement on March 23 marked the beginning of the longest and most deadly Ebola outbreak to date.

1.1 EBOLA OVERVIEW

Ebola virus and its close sister, Marburg virus, constitute the family Filoviridae, which is a part of the order Mononegavirales.(Feldmann H, Geisbert TW et al. 2004) Filoviruses are enveloped, non-segmented, negative-stranded RNA viruses named after their characteristic filamentous particles.(Kiley MP, Bowen ET et al. 1982) There are five species of Ebola virus classified to date: Zaire, Sudan, Taï Forest (Côte d'Ivoire), Bundibugyo, and Reston viruses.(Feldmann H and Geisbert TW 2011) Analysis of blood samples obtained during MSF epidemiologic investigation in March 2014 indicate that the strain of Ebola virus effecting West Africa is different from species previously identified, yet very similar to Zaire Ebolavirus.(Baize S, Pannetier D et al.

2014) Since the ongoing outbreak is similar to the Zaire species, the focus of the following sections will pertain specifically to this species.

1.1.1 History

The Marburg virus was the first filovirus identified from an outbreak reported in 1967 in Germany and the former Yugoslavia.(Siegert R, Shu HL et al. 1967) It was not until 1976 when similar cases of hemorrhagic fever occurred in Southern Sudan and Zaire (now Democratic Republic of Congo (DRC)) that Ebola virus, named after a small river in northwestern Zaire, was identified.(WHO 1978, WHO 1978). Since 1976 there have been 14 laboratory confirmed outbreaks of Zaire strain Ebola virus (Table 1).(Center for Disease Control and Prevention, National Center for Emeriging and Zoonotic Infectious Diseases et al. 2015)

Table 1: Known Outbreaks of Zaire Species Ebola Virus Disease in Reverse Chronological Order

Year(s)	Country	Reported number of human cases	Reported number (%) of deaths among cases	Situation
Dec 2008- Feb 2009	DRC	32	15 (47%)	Outbreak occurred in the Mweka and Luebo health zones of the Province of Kasai Occidental
2007	DRC	264	187 (71%)	Outbreak occurred in Kasai Occidental Province. The outbreak was declared over November 20. Last confirmed case on October 4 and last death on October 10.
2004	Russia	1	1 (100%)	Laboratory contamination
Nov-Dec 2003	Republic of the Congo	35	29(83%)	Outbreak occurred in Mbomo and Mbandza villages located in Mbomo district, Cuvette Ouest Département
Dec 2002-Apr 2003	Republic of the Congo	143	128 (89%)	Outbreak occurred in the districts of Mbomo and Kéllé in Cuvette Ouest Département

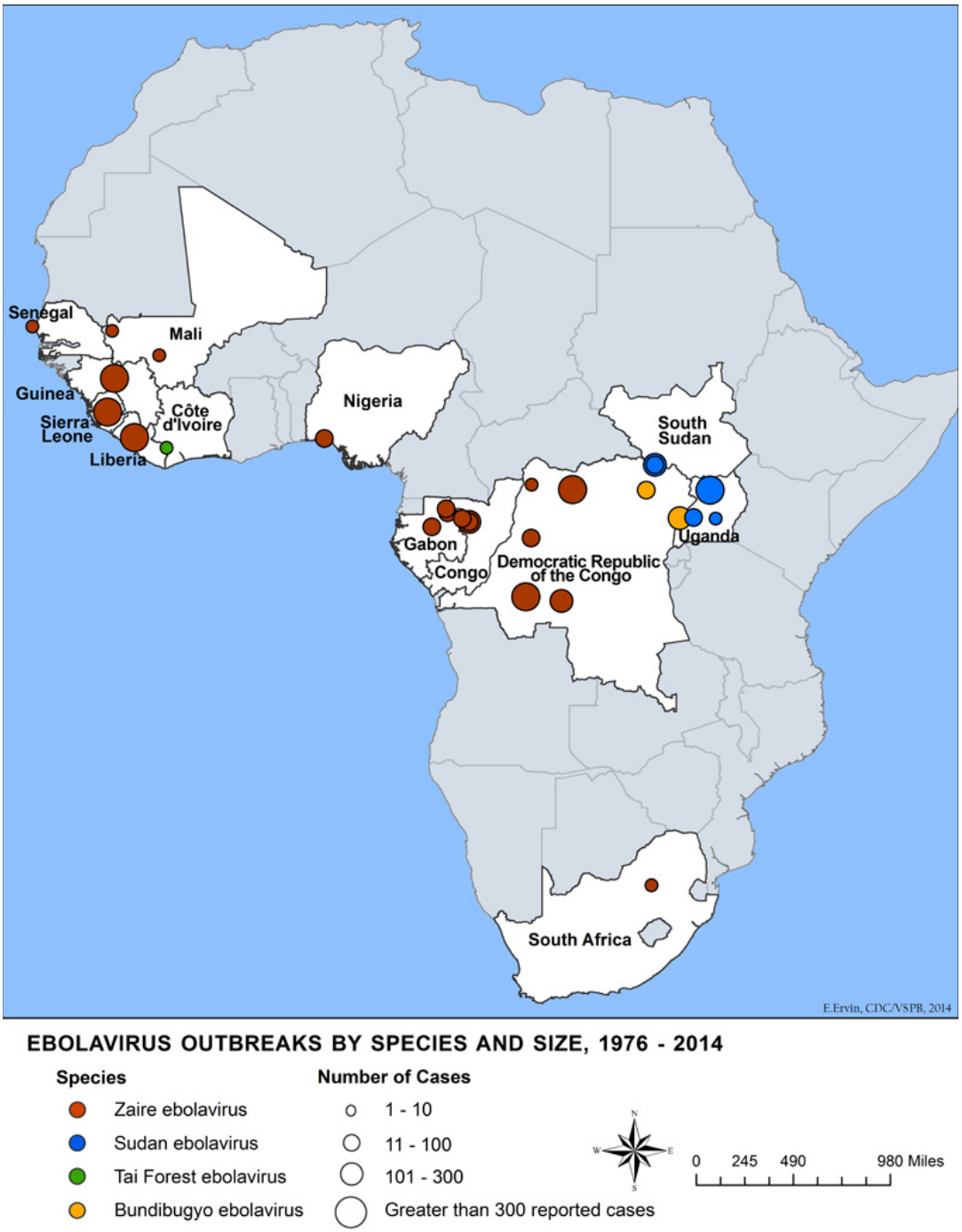
Table 1 Continued

Oct 2001-Mar 2002	Republic of the Congo	57	43(75%)	Outbreak occurred over the border of Gabon and the Republic of the Congo. This was the first time that Ebola hemorrhagic fever was reported in the Republic of the Congo.
Oct 2001-Mar 2002	Gabon	65	53 (82%)	Outbreak occurred over the border of Gabon and the Republic of the Congo.
1996	Russia	1	1 (100%)	Laboratory contamination
1996	South Africa	2	1 (50%)	A medical professional traveled from Gabon to Johannesburgh, South Africa, after having treated Ebola-infected patients and having been exposed to the virus. He was hospitalized, and a nurse who took care of him became infected and died.
July 1996- Jan 1997	Gabon	60	45 (74%)	Occurred in Booué area with transport of patients to Libreville. Index case-patient was a hunter who lived in a forest camp. Disease was spread by close contact with infected persons. A dead chimpanzee found in the forest at the time was determined to be infected.
Jan – Apr 1996	Gabon	37	21 (57%)	Occurred in Mayibout area. A chimpanzee found dead in the forest was eaten by people hunting for food. Nineteen people who were involved in the butchery of the animal became ill; other cases occurred in family members.
1995	DRC (formerly Zaire)	315	250 (81%)	Occurred in Kikwit and surrounding area. Traced to index case-patient who worked in the forest adjoining the city. The epidemic spread through families and hospitals
1994	Gabon	52	31 (60%)	Occurred in Mékouka and other gold-mining camps deep in the rain forest. Initially thought to be yellow fever; identified as Ebola hemorrhagic fever in 1995.
1977	Zaire (Current DRC)	1	1 (100%)	Noted retrospectively in the village of Tandala
1976	Zaire (Current DRC)	318	280 (88%)	Occurred in Yambuku and surrounding area. Disease was spread by close personal contact and by use of contaminated needles and syringes in hospitals/clinics. This outbreak was the first recognition of the disease.

Center for Disease Control and Prevention, et al. (2015, March 23, 2015). "Outbreaks Chronology: Ebola Virus Disease." Ebola (Ebola Virus Disease). Retrieved March 23, 2015, from http://www.cdc.gov/vhf/ebola/outbreaks/history/chronology.html.

1.1.2 Epidemiology

The majority of Zaire Ebolavirus outbreaks have been limited to equatorial Africa, primarily Gabon, Republic of the Congo, and DRC, prior to the Western African Outbreak in 2014 and relatively small in comparison (Table 1).(Sanchez A, Geisbert TW et al. 2006) The current ongoing epidemic in West Africa has affected 9 countries to date (Figure 1). The majority of the cases have been located in the countries of Guinea, Liberia, and Sierra Leone, where it is still unresolved. As of March 21, 2015 the WHO reported 3420 cases and 2261 deaths in Guinea, 9593 cases and 4296 deaths in Liberia, and 11829 cases and 3742 deaths in Sierra Leone (Table 2).(WHO 2015)



From Center for Disease Control and Prevention, et al. (2015, 23 March 2015). "2014 Ebola Outbreak in West Africa- Outbreak Distribution Map." Ebola (Ebola Virus Disease): 2014 West Africa Outbreak. Retrieved 23 March, 2015, from http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/distribution-map.html.

Figure 1: Ebola Virus Outbreaks by Species and Size, 1976- 2014

The African countries of Nigeria and Mali had minor outbreaks that were limited to larger cities and relatively few cases. In Nigeria, 19 confirmed cases and 8 deaths occurred in the cities of Lagos and Port Harcourt.(Center for Disease Control and Prevention, National center for Emerging and Zoonotic Infectious Diseases et al. 2015, Center for Disease Control and Prevention, National center for Emeriging and Zoonotic Infectious Diseases et al. 2015) Mali had 7 confirmed cases and 6 deaths in the city of Bamako. The countries of Senegal, Spain, United Kingdom, and the United states all had limited number of cases at one each, except for the United States that had four.(Center for Disease Control and Prevention, National center for Emeriging and Zoonotic Infectious Diseases et al. 2015) None experienced a death expect for one of the US cases.

Table 2: Ebola Summary Statistics as of March 23, 2015

Country	Data as of	Case definition	Number of cases	Number of Deaths
			Cumulative	Cumulative
Guinea	21 March 2015	Confirmed	3007	1863
		Probable	398	398
		Suspected	15	NA
		Total	3420	2261
Liberia	20 March 2015	Confirmed	3151	NA
		Probable	1879	NA
		Suspected	4563	NA
		Total	9593	4296
Sierra Leone	21 March 2015	Confirmed	8518	3376
		Probable	287	208
		Suspected	3024	158
		Total	11829	3742
All Countries		Confirmed	14676	NA
		Probable	2564	NA
		Suspected	7602	NA
		Total	24842	10299

WHO (2015, 23 March 2015). "Situation Summary: Latest available situation summary, 23 March 2015." Ebola Data and Statistics. Retrieved 23 March, 2015, from http://apps.who.int/gho/data/node.ebola-sitrep.ebola-summary?lang=en.

1.1.3 Chain of Infection

Ebola virus is believed to be a classic zoonosis with a persistent reservoir located in a species that resides in endemic areas. The 2014 outbreak was believed to have started when an 18 month old child in Guinea came in contact with a bat.(World Health Organization 2015) While the evidence is not conclusive, rodents(Morvan JM, Deubel V et al. 1999) and bats(Arata AA and Johnson B 1978) have been primarily suspected as the Ebola reservoir. Bats have been successfully infected with Zaire Ebolavirus(Swanepoel R, Leman PA et al. 1996) and viral RNA and antibodies have isolated from three tree-roosting species of bats.(Leroy EM, Kumulungui B et al. 2005, Pourrut X, Delicat A et al. 2007) However, current scientific research has yet to successfully isolate Ebolavirus from a naturally infected animal in the wild. Also, the high rate at which people interact with bats in endemic areas is incongruent with the sporadic occurrence of Ebola cases. Researchers are under the assumption that Ebola is most likely dormant in a subclinical state and must be activated in the reservoir species by some sort of stimulus.(Gupta M, Mahanty S et al. 2004, Strong JE, Wong G et al. 2008)

The WHO identifies two sources of infection for humans, which are wild animals and human-to-human transmission.(WHO 2014) While bats have been indicated as the possible reservoir, apes and possibly other mammalian species are susceptible to the virus and can transmit to humans.(Groseth A, Feldmann H et al. 2007) Ebolavirus has been isolated from the skin, body fluids, and nasal secretions of experimentally infected non-human primates.(Geisbert TW, Hensley LE et al. 2003) The hunting and butchering of bats, primates, and other bush meat in endemic areas is believed to be the most common source of Ebolavirus transmission to humans. There are historical examples of outbreaks originating from the butchering of a

chimpanzee in Gabon and the handling and consumption of freshly killed bats in the DRC.(Georges-Courbot MC, Sanchez A et al. 1997, Leroy EM, Epelboin A et al. 2009)

Most of the transmission in an epidemic occurs from direct contact with infected individuals and cadavers.(WHO 1978, WHO 1978, Dowell SF, Mukunu R et al. 1999) The virus is believed to enter the human hosts through mucosal surfaces, breaks and abrasions in the skin, or by injection. Ebola virus particles or viral RNA have been detected in blood, semen, genital secretions,(Ksiazek TG, West CP et al. 1999, Rodriquez LL, De Roo A et al. 1999) and skin of infected patients.(Zaki SR, Shieh WJ et al. 1999) In humans, the route of infection appears to be linked to the disease course and outcome. Contact exposures have a mean incubation period of 5-9 days versus that of an injection at 3-6 days.(Berman JG, Piot P et al. 1978) Also worth noting, injection exposures appear to have a higher cases fatality than contact exposures.(Berman JG, Piot P et al. 1978)

1.1.4 Pathogenesis

Once Ebolavirus enters the body it has been shown to affect a wide range of cell types.(Feldmann H and Geisbert TW 2011) Initially, monocytes, macrophages, and dendritic cells seem to be the most preferred replication sites for the virus.(Geisbert TW, Young HA et al. 2003) These cells then transport the virus to regional lymph nodes, liver, and spleen.(Schnittler HJ and Feldmann H 1998, Geisbert TW, Young HA et al. 2003) From there, these cells leave the lymph nodes and spleen to other bodily tissues.

The cause of death from Ebola is multi-organ failure and a syndrome that resembles septic shock.(Feldmann H and Geisbert TW 2011) The current theory is that Ebolavirus first induces the expression of several inflammatory mediators.(Stroher U, West E et al. 2001,

Hensley LE, Young HA et al. 2002, Geisbert TW, Young HA et al. 2003) This leads to an immunologic imbalance of proinflammatory responses. These deregulated response are extremely common in fatal Ebola cases, whereas early and regulated immune system responses have been associated with recovery.(Baize S, Leroy EM et al. 2002) An extremely high concentration of virus and proinflammatory mediators are present in late stages of the disease, which is the believed cause of hemorrhage and shock.

Secondly, studies indicate that the expression or release of tissue factor from monocytes and macrophages infected with Ebolavirus leads to the development of coagulation irregularities commonly observed in Ebola hemorrhagic fever.(Isaacson M, Sureau P et al. 1978, WHO 1978) While bleeding from bodily orifices, mucosal membranes, and venipuncture sites does occur during an Ebola infection, massive loss of blood rarely occurs and if it does, it is insufficient to be fatal.(Feldmann H and Geisbert TW 2011) Laboratory data indicates that the coagulation abnormalities most likely lead to disseminated intravascular coagulation, which is the formation of many small blood clots in blood vessels.(Levi M 2007) This clots prevent blood flow to organ tissue, which explains the multi-organ failure in fatal cases.

1.1.5 Clinical Manifestations

While different Ebolavirus strains may exhibit slightly different symptoms, in general the incubation period is 2-21 days, with a mean time of 4-10 days. Initial symptoms are often fever, chills, malaise, and myalgia. The subsequent signs and systems indicate multisystem involvement and include systemic, gastrointestinal, respiratory, vascular, and neurological manifestations.(Feldmann H and Geisbert TW 2011) Hemorrhagic manifestations arise during the peak of the illness including small red or purple spots on the skin (petechia), bruising,

uncontrolled oozing at needle puncture sites, and mucosal hemorrhages. A macropapular rash of varying degrees of redness and scaly skin patches that peel often occur around day 5-7, a symptom that is important for differential diagnosis. Patients with fatal cases die between 6-16 days due to hypovolemic shock and multiorgan failure. Patients that survive tend to improve typically around day 6-11. Laboratory tests indicate a strong response of IgM and IgG and inflammatory response of interleukin β, interleukin 6, and tumor necrosis factor α in patients that survive.(Ksiazek TG, West CP et al. 1999, Sanchez A, Geisbert TW et al. 2006)

1.1.6 Diagnosis

Clinical diagnosis of Ebola is rather difficult. It may be suspected in patients with acute febrile symptoms in endemic areas or recently traveling from endemic areas. However, in African endemic areas there are a number of other causes of acute febrile symptoms, such as Chikungunya fever, leptospirosis, typhus, and yellow fever.(Sanchez A, Geisbert TW et al. 2006) Laboratory diagnosis for viral hemorrhagic fevers are mostly done at national and international centers. There are two assays to diagnoses an acute infection, RT-PCR and ELISA antigen detection.(Sanchez A, Geisbert TW et al. 2006, Strong JE, Grolla A et al. 2006) Viral antigen and nucleic acid can be detected in the blood day 3 of symptoms up to 7-16 days, IgM is detectible 2 days after symptoms up to 30-168 days, and IgG is detectible starting around 6-18 days and linger for years.(Rowe AK, Bertolli J et al. 1999)

1.1.7 Treatment

To date there has not been a proven course of treatment for pre or post exposure Ebola cases for humans. In the developing world setting, the recommended course of treatment is symptomatic and supportive based on limited provisions.(Feldmann H and Geisbert TW 2011) Patients should be isolated and given malaria treatment, broad spectrum antibiotics, and antipyretics before diagnosis. After diagnosis, fluid substitution, preferably intravenous administration, and analgesics should be provided as needed.

1.2 PROGRESSION OF EBOLA EPIDEMIC IN 2014

1.2.1 Guinea

Shortly after the mid-March announcement of an Ebola outbreak, the president of Guinea visited the WHO headquarters to discuss several indications that the epidemic was expected to end around May 1. These conclusions were also supported by MSF and the US Centers for Disease Control and Prevention (CDC).(WHO 2015) However, the reported trend was only the conclusion of the first of three cycles of high intense transmission Guinea would face (Figure 2).

The Guinea communities early in the epidemic developed a huge mistrust of the foreign teams working in their areas. When the second increase in cases was reported by a MSF emergency coordinator, she attributed community resistance and porous country borders as the primary reasons for resurgence.(WHO 2015) Hiding ill family members, secret night burials, and angry mob assaults on medical teams and facilities, that often results in the loss of equipment

and supplies, which greatly impeded the relief efforts. The start of the third cycle in August saw a greater increase in cases. In September an angry mob in the mining town of Forecariah drove health workers out.(WHO 2015) The large regional hospital in the town had two established chains of infection to the capital city, Conakry and a third to Sierra Leone. The loss of Forecariah to the mob cost weeks of work spent trying to contain the epidemic. Cases continued to increase for the rest of the year.(WHO 2015)

1.2.2 Liberia

Liberia experienced a very slow start between the initial infections on March 30 and mid-August when WHO experts began their investigation (Figure 2).(WHO 2015) The initial cases were located in Foya, a district in Lofa county that borders Guinea. While one patient did die in Monrovia, the capital city, most of the cases were located in Lofa County and gave the impression that Ebola was “stable” in the country. What was unknown at that time and discovered by the WHO team in August was no hospitals in Liberia had isolation wards. Most importantly, the premiere referral hospital in Monrovia did not have an isolation ward and few medical staff had been trained in proper infection prevention measures. Chains of transmission connected staff, patients, visitors, employees, and even taxi drivers. Ebola cases increased exponentially until the last few days of September, when the first good news was reported, stating that Lofa county cases were starting to decline.(WHO 2015)

By mid-November the treatment capacity had increased in Monrovia, however many people had left the capital for rural villages and had brought the virus with them. Now, many beds in Monrovia lay empty, while there was no infrastructure in the rural areas to address cases(WHO 2015). Many villages lacked health care facilities and basic telecommunication and

transportation networks needed to adequately identify and treat cases. Patients in rural areas refused to seek treatment in Monrovia because of the distance needed to travel and dead bodies were cremated in the capital per government decree, which was against traditional burial practices. A rapid response team strategy was employed by the WHO. By the end of December, 6 of 15 counties were reporting cases instead of all 15 counties during the peak of the Liberian epidemic in mid-October.(WHO 2015)

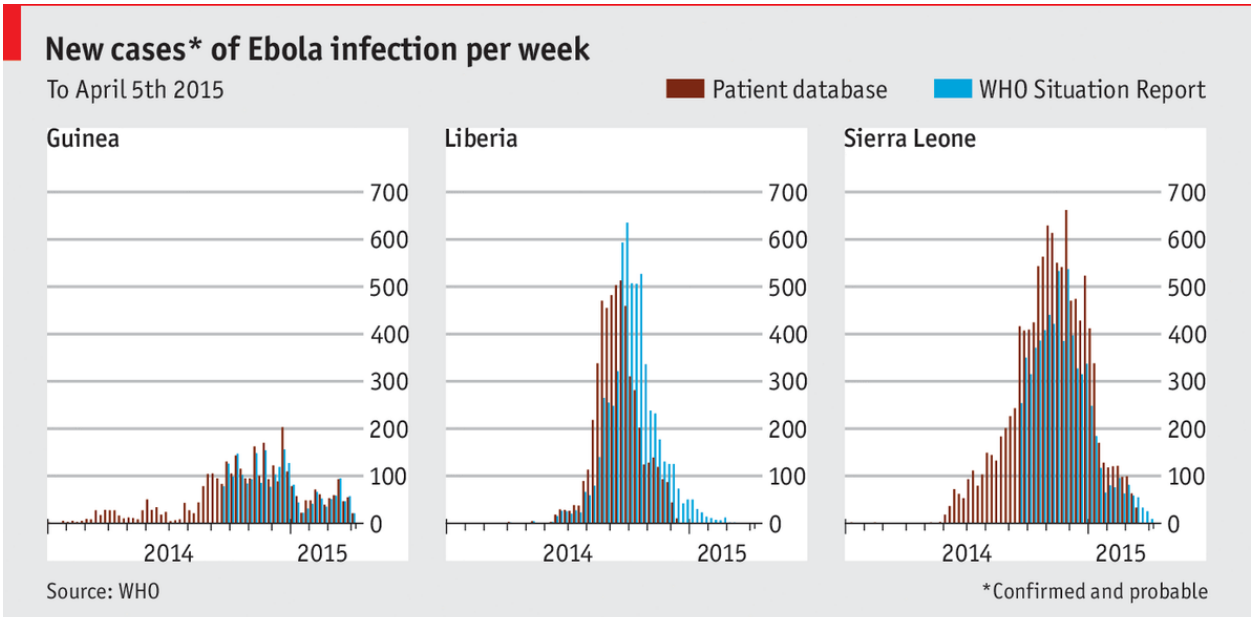
1.2.3 Sierra Leone

There were two isolated incidents that were attributed to bringing Ebola into Sierra Leone. The first was a woman who was visiting the family of the index case.(WHO 2015) When the family fell ill from the child she returned to Sierra Leone and died a few days later. The second case set off the chain reaction that lead to a large epidemic in Sierra Leone. On May 10, a funeral occurred in a district bordering Guinea, Kailahun, for a very popular traditional healer infected through treating Guinea nationals that crossed the border seeking her care. Her funeral created a snowball effect of more cases, leading to more funerals, leading to more cases, and so on. By June 12, a state of emergency was called in the Kailahun district resulting in the closing of schools and other places of public gatherings.(WHO 2015)

The WHO, MSF, and other aid organizations focused their efforts in Kailahun and Kenema, a larger city to the south. These two places remained the epicenter of the Sierra Leone Ebola outbreak throughout July and August. As cases began to stabilize in Kailahun and Kenema, Ebola was gaining a foothold in Freetown, the capital city, during the month of September (Figure 2).(WHO 2015) The districts of Freetown, Port Loko, Bombali, and Tonkolili were showing sharp spikes in cases and the health systems in those areas were quickly

overwhelmed. By mid-October, Freetown was reporting 400 new suspected cases a week.(WHO 2015)

Cases continued to grow in Sierra Leone and by the first week in December, Sierra Leone surpassed Liberia as the country with the highest total cases. Freetown consistently accounted for one third of the cases and 10 of 14 districts reported cases.(WHO 2015) The original epicenter of Kailahun and Kenema had dwindled to one or two cases, but the western portion of the country was intensely battling the epidemic. A massive initiative entitled Operation Western Area Surge was started to address these areas mid-December. The intent was to address and correct past issues in order to regain the public's trust. The Bill & Melinda Gates Foundation, the United Kingdom (UK) government, MSF, and WHO were the major players in the campaign designed to address malaria, increase bed and laboratory capacities, conduct contact tracing, train community volunteers, and assess facilities to improve safety for staff and patients.(WHO 2015) This campaign was started in December and continued into January.



From Economist (2015, April 9). "The Toll of the Tragedy. Graphic Detail: Charts, Maps and Infographics. Retrieved April 11, 2015, from http://www.economist.com/blogs/graphicdetail/2015/04/ebola-graphics

Figure 2: New Cases of Ebola per Week, Jan 2014- Mar 2015

1.3 INTERNATIONAL RESPONSE TO EBOLA OUTRBEAK

Although the WHO announced the outbreak of Ebolavirus on March 23, 2015, the international community did not get involved largely until October. There were a few setbacks to this response identified by the WHO and MSF in their 2014 reports of the epidemic. The first issue overcome was the acknowledgement of the severity of the epidemic. The country governments were hesitant to accept the possibility of a widespread epidemic.(Medecins Sans Frontieres 2015, WHO 2015) Fears were mainly driven by the impact of an epidemic on air travel/ tourism and international private investment and business. Secondly, the WHO at the time only possessed the

capacity to provide technical assistance and advising to the member governments. A majority of the health care fell on MSF, who did not have the resources or the medical expertise available to address an epidemic on that large of scale.

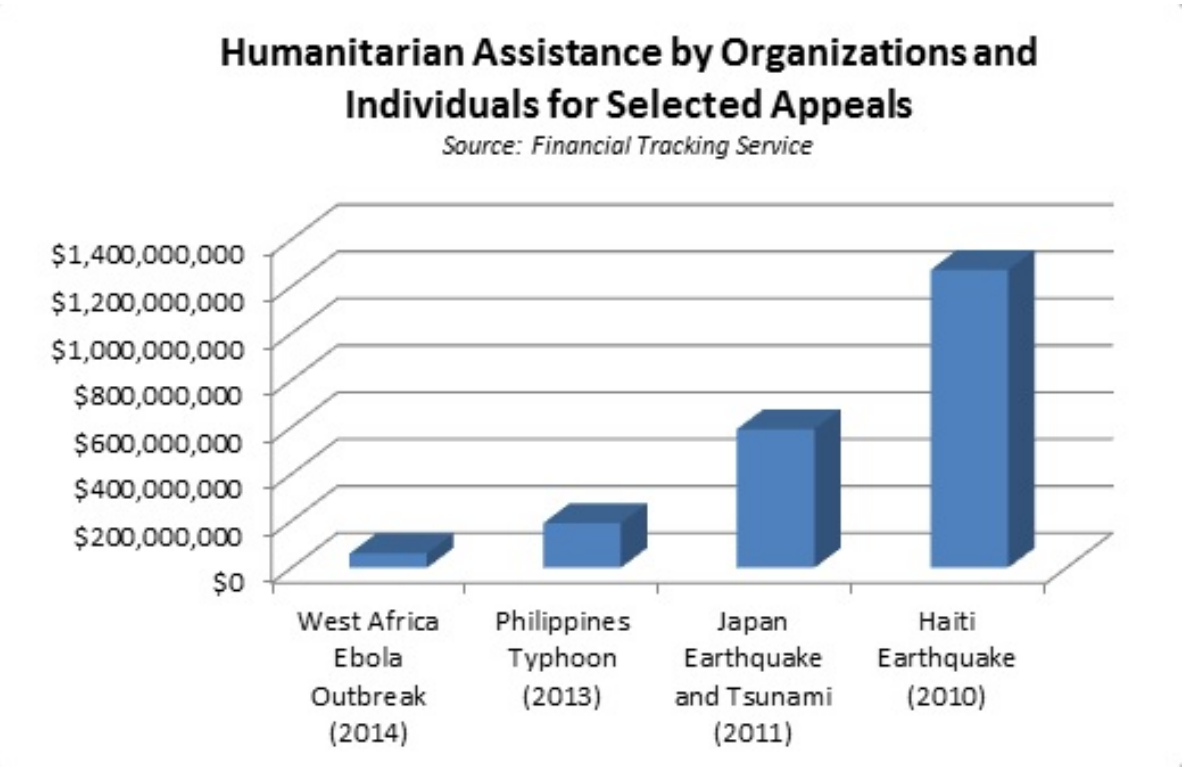
The WHO was not given formal control over the response until June 27th.(WHO 2015) It was not until the end of July that the WHO had petitioned and raised enough support to start addressing large identified areas of need, but by that time second and third waves of transmission had occurred. While the WHO was working extremely hard to coordinate Ebola efforts across three countries, the local governments were communicating little and fearful of admitting the dire direction the epidemic was moving towards. It was not until a meeting in Conakry, Guinea on August 1, that the three presidents of the most affected nations met and outlined how they would work together to address this epidemic. They also made a formal plea to the international community at this meeting for assistance increasing their capabilities in the areas of surveillance, contact tracing, care management, and laboratory services.(WHO 2015) The WHO similarly launched a $100 million fundraising campaign to support their efforts as the coordinator of overall operations.

The WHO formally declared the West Africa Ebola epidemic a public health emergency of international concern on August 9. This was spurred by the small Ebola outbreak transported via international air travel to Lagos, Nigeria on July 20th. Per the 2005 revisions of the International Health Regulations, an emergency committee needed to be convened to determine if the severity of the outbreak warranted an emergency designation, which has the potential to significantly impact the countries economies. The committee assembled on August 8 and unanimously decided one day later this was a public health emergency of international concern.

This declaration was not the start of aid response nor the first warning issued by the WHO, yet the international aid community was not getting involved.

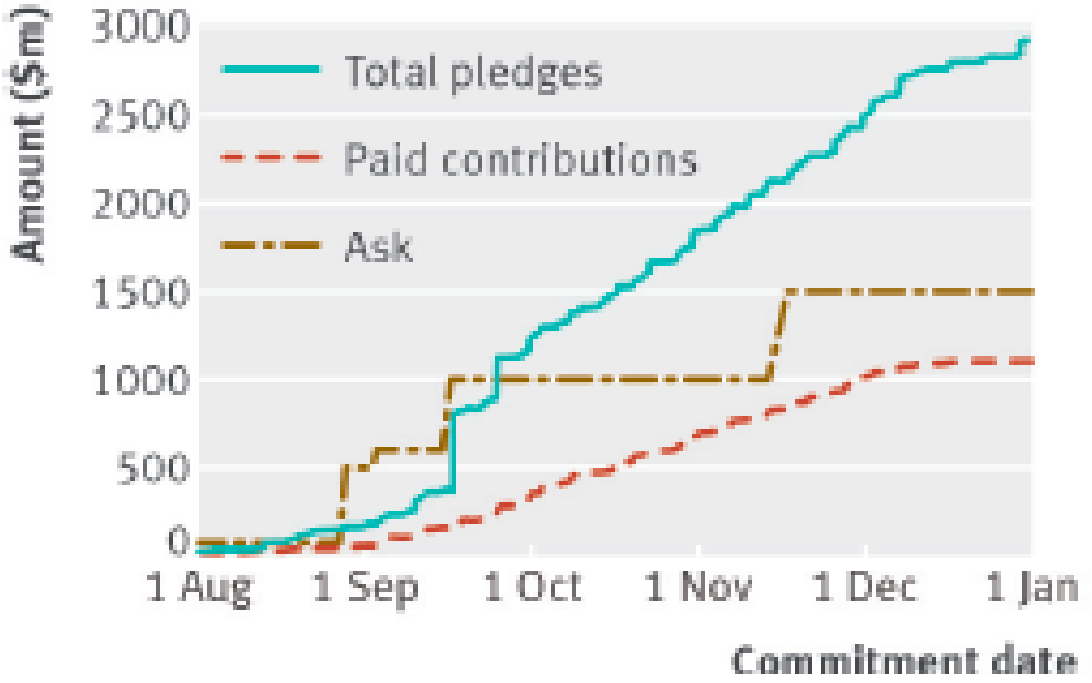
The MSF attributes the slow response to fear of Ebolavirus and the “spacesuit” doctoring that is involved in the treatment of the virus.(Medecins Sans Frontieres 2015) Additionally, speculation for lack of appeal to provide assistance has been attributed to feelings of hopelessness due to high mortality rates, absence of emotionally potent and encapsulating images, and general unfamiliarity with West Africa.(Grabois 2014) The turning point MSF believes, was international governments and organizations beginning to fear the epidemic affecting their countries. The specific events identified with prompting this fear were the return of an infected US doctor to the US and an infected Spanish nurse to Spain for treatment.(Medecins Sans Frontieres 2015)

Dr. Joanne Liu, MSF international president was quoted for stating “The lack of international political will was no longer an option when the realization dawned that Ebola could cross the ocean.”(Medecins Sans Frontieres 2015) Even with greater international interest funding is still drastically below that of recent disasters (Figure 3). While the Figure 3 does not account for the duration of the disasters and the amount of devastation, many aid organizations reported to the New York Times that fundraising has yielded nowhere near what they have received from previous appeals or what is needed to respond to the Ebola crisis.(Grabois 2014) Furthermore, in the months of September and October, many governments were pledging money and human resources to aid in the effort. However, an analysis conducted of Ebola donations received between August and December 31, 2014 found that only $1.09 billion of $2.89 billion in pledges had been paid.(Grepin 2015) The amount of donations received falls well below the requests of the WHO to effectively combat the Ebola epidemic (Figure 4).



From Grabois, A. (2014, 1 November). "Trends in Ebola Relief Funding." Philanthropy Front and Center. Retrieved 23 March, 2015, from http://newyorkblog.foundationcenter.org/2014/11/trends-in-ebola-relief-funding.html.

Figure 3: Humanitarian Assistance by Organizations and Individuals for Selected Appeals



From Grepin, K. (2015). "International donations to the Ebola virus outbreak: too little, too late?" BMJ 350(H376).

Figure 4: Pledges and Paid Contributions to WHO during Ebola Epidemic

1.4 NATIONAL PEACE CORPS ASSOICATION EBOLA RELIEF FUND

The National Peace Corps Association (NPCA) is an association for volunteers who have returned from international volunteers service in the United States Peace Corps. The United States Peace Corps is an international service organization of the United States Governemnt. It has three goals; 1.) To help the people of interested countries in meeting their need for trained men and women 2.) To help promote a better understanding of Americans on the part of the peoples served and 3.) To help promote a better understanding of other peoples on the part of

Americans.(United States Peace Corps 2014) It was officially established by President John F. Kennedy on March 1, 1961 and to date has sent nearly 220,000 Americans to serve in 140 house countries.(United States Peace Corps 2013)

The NPCA was founded in 1979 as a 501(c)(3) organization devoted to serving as an alumni organization for returned peace corps volunteers (RPCVs) and advocating for, contributing to, and supporting the betterment of the US Peace Corps.(National Peace Corps Association) The NPCA has 140 member groups, which are groups of RPCVs that have formed formal groups usually by geographic locations or country of Peace Corps service. For example, the title “Friends of Guinea” is a common format of title for volunteers that returned from service in the country of Guinea and the Pittsburgh Area Peace Corps Association is a title structure common for regional groups. These groups provide many functions for members. In the case of “Friends of” groups that focus primarily on a country of service, they allows RPCVs stay connected to their countries of service and volunteers they served with. Regional groups tend to be similar to local alumni chapters. They host networking events, advocacy events for Peace Corps or other international movements, and other social gatherings.

1.4.1 Ebola Relief Fund

In September of 2014, the NPCA was approached by several volunteers, primarily in the member groups of Friends of Guinea, Friends of Liberia, and Friends of Sierra Leone, to serve a role coordinating an Ebola relief effort on behalf of the RPCV community. It was decided that NPCA would facilitate the mass solicitation, collection, and disbursement of grants to the three most affected countries in the Ebola Epidemic. A steering committee was assembled of 7 volunteers to oversee the process and aid in the additional work burden assumed by the NPCA.

A chairman was selected who is an RPCV and retiree from an extensive career managing global health organizations in the Washington D.C. area. Each "Friends of" member chapter designated two volunteers for a total of six volunteers. The NPCA Vice President served as an ex. officio member and the chairman recruited an information coordinator to assist with preparing news briefs and preparing comments and critiques of received grants to assist committee members with their proposal reviews. The information coordinator was later awarded a consulting contract when the workload increased for the committee. He was given the title Associate Director for Coordination and Analysis and became responsible for coordinating the grant review process, as well as the monitoring and evaluation of grants. The creation of the Ebola Relief Fund (ERF) was announced in September 2014 (Table 3) and it released its first request for proposals to NGOs registered in Guinea, Liberia, and Sierra Leone. Subsequent second and third rounds occurred between November and March.

Table 3: Significant Events for NPCA Ebola Relief Fund

Date	Event Description
September 26, 2014	Initial Meeting of ERF steering committee
October 1, 2014	Request for Proposal Released
October 15, 2014	Proposal Deadline- Round 1
October 28, 2014	Proposals Selected for Funding- Round 1
October 31, 2014	Banking Transfers Initiated
November 17, 2014	Proposal Review Deadline- Round 2
December 4, 2014	Proposals Selected for Funding- Round 2
December 31, 2014	Banking Transfers Initiated
January 7, 2015	Request for Proposals Release- Round 3
February 6, 2015	Proposal Deadline- Round 3
February 26, 2015	Proposals Selected- Round 3
March 23, 2015	Banking Transfers Initiated

In order to raise funds and solicit grants, the ERF heavily relied on the NPCA RPCV network to fundraise and alert target organizations of the grant opportunity. Applications were made available online for organizations to complete and submit through email. In order to sure

the proposals written were legitimate and sincere, organizations that submitted proposals were asked to identify RPCVs that could vouch for them and steering committee members vetted organizations prior to making final funding decisions. The grant money was sent via bank wire transfer to selected organizations. The steering committee solicited applications and awarded grants over three rounds between October 2014 and March 2015. In total, approximately $78,000 (Figure 5) was raised, 100 proposals were received, and 25 grants were awarded (Table 4). Based on impact estimates from all the grants awarded funds the ERF expects to provide a variety of services to 240,000 people.

Table 4: NPCA ERF Grant Round Results

Round	**Proposals Received**	**Proposals Funded**	**Expected Impact***	**Funds Approved**
Round 1	37	7	83,850	$20,839
Round 2	26	9	101,900	$28,417
Round 3	47	9	57,750	$26,360
Total	100	25	243,500	$75,616

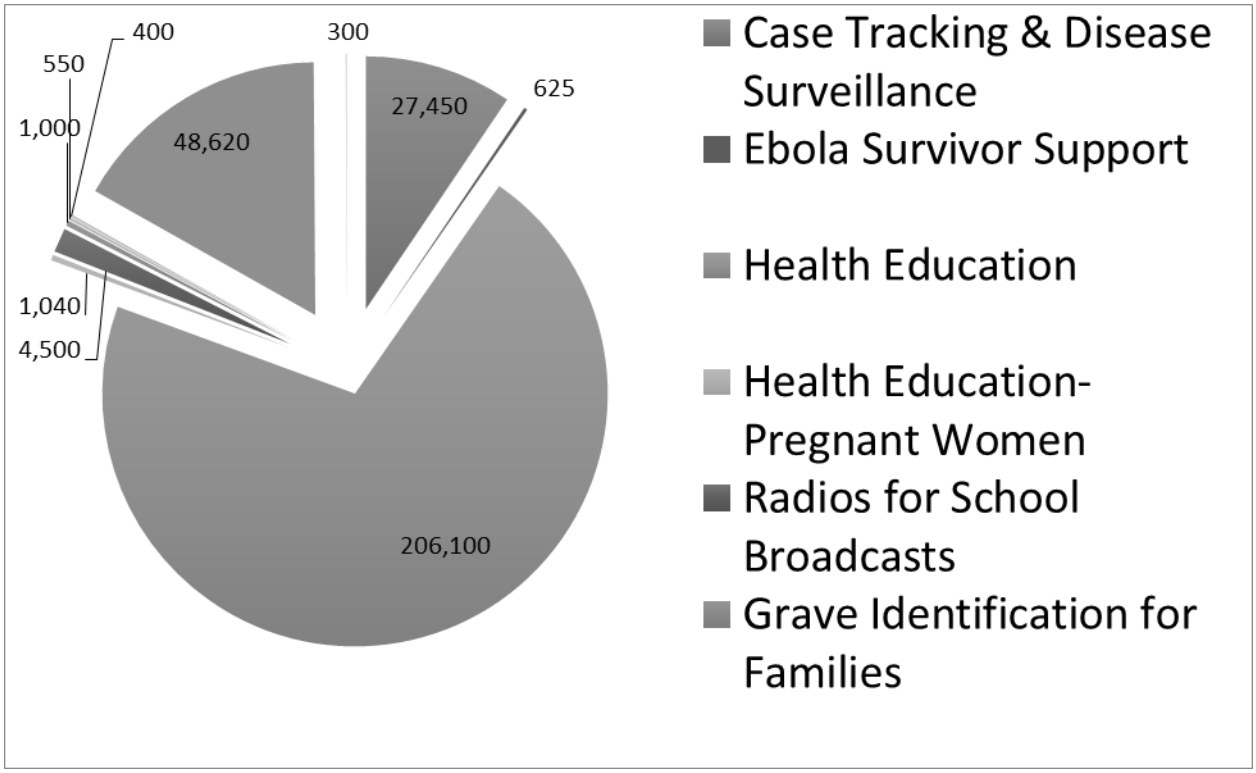


Figure 5: Areas of Grant Impact by Number of People Served

1.5 RATIONALE

The methods of providing aid used by the NPCA was new to the organization and discussed little in the literature. Now that initial data is returning from funded organizations in the form of mid-term and final evaluations, the NPCA needs to assess if this model has been an effective use of resources in reducing the impact of Ebola. Common worries associated with providing unsupervised grants in developing countries is mismanagement of funds and poor program

implementation, which often result in poor program outcomes. The quality of grants received, the ability of organizations to comply with their originally proposed program methods, and the ability of the organization to achieve their programs objectives needs to be assessed.

Furthermore, with the decline in cases starting in February and the announcement by UNMEER that the necessary infrastructure to combat Ebola is in place, the question must be posed if the NPCA should continue to solicit donations and proposals. When the NPCA Ebola Relief Fund started, Ebola cases were appearing in almost every county in the three affected countries. Now cases are sporadic across the three countries and most populations are sensitized to the presence of Ebola. Current news suggests that the Ebola epidemic is rapidly being controlled in West Africa. Therefore, the ERF criteria for selecting grants needs to be assessed for relevance due to the changing landscape of the epidemic.

1.6 GOAL

The goal of this assessment is to better understand the actual impact of the NPCA Ebola Relief Fund and guide the NPCA in the operation of the ERF in what appears to be the final stages of the 2014-2015 Ebola Epidemic.

1.7 EVALUATION OBJECTIVES

1. To assess if the ERF was able to attract quality proposal submissions from local organizations through utilizing their returned volunteers' networks in country

2. To assess if organizations who were awarded grants used the money responsibly and as described in their grant proposals
3. To assess if organizations were able to achieve the expected results as described in their proposals
4. To determine if the NPCA should continue operating the Ebola Relief Fund following the same methods as the first three funding rounds

1.8 EVALUATION QUESTIONS

1. Are the methods used by the Ebola Relief Fund an effective and impactful use of resources?
2. Does the current status of the Ebola Epidemic require a change in Ebola Relief Fund practices?

2.0 LITERATURE REVIEW

The focus of this literature review will be directed at lessons learned from past epidemics and natural disasters to better understand effective methods of aid delivery in crisis situations. Furthermore, barriers and promoting factors to the 2014-2015 Ebola epidemic response will be discussed in order to better understand potential areas or methods for effective participation in this epidemic.

2.1 LESSONS LEARNED FROM PAST EPIDEMICS

In the last 15 years the most notable epidemic were that of the SARS epidemic in Hong Kong, China in 2003 and the cholera outbreak in Haiti post-earthquake in October of 2010. In both of these cases the health care systems were caught unawares due to a novel the pathogen infecting the local population.(Hung LS 2003, Tappero JW and Tauxe RV 2011) In the case of SARS, this was a new form of atypical pneumonia that had otherwise never been encountered. The outbreak of Cholera, while a well-known pathogen, had never existed in that portion of the world.

The Chinese struggled with SARS in initial stages of the outbreak because of a few structural and process inefficiencies that existed in their health system. First, the inadequate epidemiological information capturing and reporting prevented authorities from implementing effective control measures.(Hung LS 2003) Due to the rapid spread of SARS, hospitals, staff and

administrators were caught completely by surprised and unequipped to handle the infection. Public panic ensued, which lead to low levels of cooperation and support. Secondly, the health system in Hong Kong was already overtaxed with overcrowded wards, lack of isolation facilities, inadequate intensive care facilities, and outdated ventilation systems in a number of buildings.(Hung LS 2003) The health care providers struggled to identify potential SARS cases and remove them from the general patient population for further treatment in isolation. Thirdly, communication between the Department of Health, the Hospital Authority, and the Secretary (Ministry) level responsible for health policy and management of the operation of hospitals was ineffective.(Hung LS 2003) Lack of communication regarding the index case and further decisions greatly delayed decision-making and implementation of control measures.

The SARS scenario reinforced the importance of fundamental epidemiology and communication of the surveillance data gathered. Furthermore, the importance of a strong and well informed government presence to facilitate decision making is crucial to success. The fact that there was a lack of isolation facilities cannot be ignored either. The ability of the response to establish a case diagnosis and adequately screen and separate suspected cases from the general public is imperative in limiting the spread of the illness to the general public.

Haiti was spared a more serious epidemic because of the large amount of infrastructure that had been established in the country due to the recent earthquake. Unfortunately, a hurricane struck in the middle of the investigation which rapidly contaminated water sources around Haiti and the Dominican Republic and accelerated the spread of the bacteria. This outbreak affected 470,000 people of which 6,631 died making it the worst cholera outbreak in recent history.(Tappero JW and Tauxe RV 2011) Remarkably, one year after the outbreak however the case fatality ratio had dropped well below the 1% standard set by the WHO.

One factor that greatly assisted with the outbreak was a strong laboratory presence established from the earthquake response. It permitted authorities a relatively quick turnaround in the identification of the type of cholera present in the outbreak. Additionally, a strong supply chain and communication links were already established with the United State Government (USG) and additional funds were approved from PEPFAR to bolster stores of intravenous rehydration fluids and oral rehydration salt sachets.(Tappero JW and Tauxe RV 2011) The CDC also developed training materials in French and Creole within a few weeks of the index case. This allowed the training of 10,000 community health workers (CHWs) that assisted the Haitian government and other organizations in staffing clinics, teaching health education classes, and leading prevention activities in communities.(Tappero JW and Tauxe RV 2011) The supply chain, involvement of Haitian clinicians and CHWs, and the strong laboratory presence resulted in quick and widespread access to treatment.

As in the case of Haiti, epidemics are believed to be of high risk following a natural disaster due to large numbers of displaced people and collapse of normal systems and utilities. This is an argued “myth” because there has been no quantifiable risk of infectious disease epidemic risk pending a natural disaster.(Zhang L, Liu X et al. 2012) However, experts encourage a rapid and thorough implementation of surveillance and early warning systems for both endemic and new pathogens in the event of a disaster.(Kouadio IK, Aljunid S et al. 2012, Zhang L, Liu X et al. 2012) The case of cholera in Haiti, is a strong testament to surveillance for any form of threat. The start of the Haiti cholera outbreak was attributed to Nepalese Peace Keepers.(Tappero JW and Tauxe RV 2011) The surveillance mechanism was quick to noticed abnormal illnesses and respond. With the increasing trend in international response to large crisis situation, the affected country might be at an increased risk for foreign pathogens. Experts

further point out the importance of stockpiling important supplies for disasters so they are ready to be deployed quickly in the event of a disaster.(Kouadio IK, Aljunid S et al. 2012) This will greatly limit the opportunity for an epidemic to begin if displaced populations are not overcrowding shelters and have access to clean food and water, as well as preventative health supplies such as mosquito nets.

2.2 LESSONS LEARNED FROM MANAGING CRISIS SITUATIONS

2.2.1 Coordination

It has been stressed multiple times in the literature that the leadership role of the national government of the affect country is crucial for the successful coordination of a crisis situation.(Herson M 2005, Frum 2010, Ville De Goyet C, Sarmiento JP et al. 2011) A common trend that appears in debrief reports after a national disaster is that "Mobilizing more external coordinators will not, in itself, improve coordination. Coordination without meaningful participation and leadership of the national health authorities is ultimately doomed to fail."(Ville De Goyet C, Sarmiento JP et al. 2011) A management vacuum ensued in response to the Haiti outbreak because the national government had a long history of being reliant on bilateral and multinational aid organizations for years. When a record breaking 390 organizations registered with the United Nations (UN) as participants the lack of a clear leader resulted in confusion and disorganization in the initial days of the response effort.(Ville De Goyet C, Sarmiento JP et al. 2011) The International Federation of Red Cross and Red Crescent societies (IFRC) found that relief organizations were "guided by their own domestic needs" instead of the needs expressed

by the local populace during the 2004 Tsunami disaster that befell Indonesia and Sir Lanka.(Herson M 2005) Organizations motivated by news images of devastated Meulaboh, named “ground zero” by the media, neglected to address 150,000 people on a different shoreline.(Frum 2010) Additionally, out of the 200 organizations participating only 46 submitted reports to the United Nation (UN) coordinators, leaving the entire operation in the dark about the extent of the damage and services that were being provided.(Herson M 2005)

2.2.2 Importance of Local Populations

The Pan American Health Organization report stressed the importance of engaging local populations in crisis situations. They state that the involvement of locals often goes understated due to the large media machines that aid organizations have to promote their work.(Ville De Goyet C, Sarmiento JP et al. 2011) The importance of incorporating local CHWs and Haitian clinicians was imperative in addressing the Cholera outbreak.(Tappero JW and Tauxe RV 2011) Not only are the indigenous populations an important workforce in addressing the crisis, but they need to be included in the decision-making and education.

If a population is not engaged and educated they can quickly become an opposing force to relief efforts. This has been witnessed in the SARS outbreak in Hong Kong with a panicked populations turning uncooperative.(Hung LS 2003) Additionally, the outpouring of international aid is often uninformed. Instead of receiving supplies that victims need, shipping ports and aid workers become clogged with unsolicited and unannounced goods.(Herson M 2005) If all aid organizations and international well-wishers do not seek to involve the affected population, aid efforts can be greatly delayed.

2.2.3 Volunteers

With the popularity of participating in large disasters increasing, responses are creating larger waves of generosity than ever before.(Ville De Goyet C, Sarmiento JP et al. 2011) This unfortunately leads to a large number of volunteers who are in need of coordination. In Haiti, the magnitude of need and the poor state of services prior to the earthquake could utilize the large number of volunteers that arrived. However in smaller scale events such as the Indian Ocean Tsunamis and earthquakes in Iran and Pakistan, most of the teams were more burdensome than helpful.(Herson M 2005, Ville De Goyet C, Sarmiento JP et al. 2011) In Haiti, the large volunteer force was not without issues. First, foreign teams encountered language barriers since French and Creole were the only languages spoken in an area of the world surrounded by English and Spanish speaking countries.(Ville De Goyet C, Sarmiento JP et al. 2011) Secondly, there were many areas that impeded the abilities of inexperienced volunteers to conduct their, such as the cultural and spiritual beliefs of the population they are working with.(Jose MM 2010, Archer N, Moschovis PP et al. 2011)

Logistically, there are a number of administrative obstacles to bring volunteers into a crisis situation. UN security rules may require customs clearance, approval to enter country, and arrangement for an escort, all of which must be coordinated by the aid organizations.(Ville De Goyet C, Sarmiento JP et al. 2011) If there are a large number of skilled and unskilled volunteers, significant delays can hinder the abilities of trained professionals to respond to a crisis. With that being said over the course of the epidemic the report of Haiti conducted by PAHO did state that the number of volunteers and organizations were able working harmoniously. The large highly skilled/technical organizations addressed the major issues and

the smaller organizations identified smaller more specific niches that were unaddressed by the premiere organizations.

2.3 ISSUES SPECIFIC TO THE 2014-2015 EBOLA EPIDEMIC

2.3.1 Unprepared Health Systems

Three basic factors in the health systems left the countries of Guinea, Liberia, and Sierra Leone unprepared to deal with the Ebola outbreak that started in 2014. First, these three countries are some of the poorest in the world due to years of civil war.(WHO 2015) The infrastructure of the entire country is lacking in the ways of health facilities, road networks, telecommunications, and transportation systems. The medical staff at these facilities were already understaff. Prior to the outbreak the three countries had approximately 2 doctors per 100,000 people. By the end of the year 700 health care workers had become infected with Ebolavirus and half died as a result.(WHO 2015)

Secondly, not only were the health systems structurally underequipped to control an outbreak of Ebola, but this part of Africa had never had a case of Zaire species Ebolavirus. The nearest outbreak was one case of Tai Forest Ebola occurred in Cote D'Ivore, however strain has yet to resurface. The appearance of this virus in the area caught the health systems completely unaware. Compounding the problem, there are a number of illnesses endemic to the region that have similar clinical manifestations, which made the diagnosis much more difficult to ascertain early in the epidemic.(Feldmann H and Geisbert TW 2011, World Health Organization 2015)

Lastly, governments were unprepared, as well for the financial burden of funding the large workforce needed to treat and bury the Ebola victims.(WHO 2015) Furthermore, the inabilities of the governments to provide the necessary safety equipment was an alarming issue for health workers. Many health care workers became infected and some died in the first months of the epidemic. The lack of payment and safety measures prompted strikes amongst health workers, which drastically impeded the treatment and safe burials of victims.

2.3.2 Local Populations

Ebola is a communicable virus requiring the successful disruption of daily routines and cultural practices that may promote the spread of the virus. The interventions imposed on the local populations by governments and foreign aid workers has been a complex issue over the course of the Ebola outbreak. Many outbreaks have been traced back to the use of traditional healers and the attendance at funerals. Due to the lack of well-established health systems at the onset of the outbreak many people affected by Ebola turned to traditional healers.(WHO 2015) When fatalities began to increase, many people feared the clinics and hospitals that were started and turned to traditional healers as well, prompting further spread of the disease.

Burials and funerals were another cultural practice that facilitated the spread of the disease. Epidemiological data collected by country government's indicated that 60-80% of transmissions were linked to burials or funerals.(WHO 2015) Compassionate care is a deep seeded tradition in West Africa, where family members and friends provide the majority of care and body preparation in the event of death. These behaviors are even further reinforced by Liberian and Sierra Leone secret societies that have rituals which entail anointment using rinse water from washing corpses or mentees of prominent community members sleeping near the

corpse for several nights so as to transfer powers. The temporary suspension of these culture practices was extremely hard to achieve by foreign aid workers and government mass promotion and educational campaigns.

The Ebola epidemic intervention by governments and foreign aid organizations appeared to elicit two unexpected emotions. The first was that of despair. Due to a high case fatality rate and little communication between health care providers and families, most families early in the epidemic decided to keep their infected family members at home so that they could die comfortably.(WHO 2015) The public health messages were so disheartening people rationalized that this was the best course of treatment for their stricken family members. However, after entire households were being killed by Ebola, many decided to start seeking "western" care for their family members. Unfortunately, for most of 2014, relief efforts were not sufficient to provide hospitable beds for all those who sought care.(WHO 2015) Families were left caring for their ill relatives again. In extreme cases, such as Monrovia, dead bodies of Ebola victims were left in the streets.

While Sierra Leone has had the highest burden of Ebola, there were some in-roads made with the local communities by listening to their requests and implementing their ideas. Most notably the example of the "Kenema tent".(WHO 2015) Residents of villages near Kenema approached the WHO field coordinator for a self-isolation facility. Due to the scarce number of beds, ill family members had to return and wait in their homes for upwards of 4 days before learning their diagnosis. Household sizes are extremely large in Sierra Leone, so an ill family member awaiting diagnosis could easily expose 6-10 family members to Ebolavirus. The idea of providing a tent for individuals to self-isolate was chosen by community members and foreign aid as a favorable solution. It was such a widely popular invention that in some villages infection

was limited to one person in a household with no additional family members being infected. This presented a valuable lesson of the importance of listening to the community.

Unfortunately, in a number of instances communities choose to resist foreign aid, sometimes to the point of violence. A large amount of distrust came from the fact that local people believed the foreign aid and hospitals were the cause of deaths.(WHO 2015) The indigenous people had been living in that area for centuries and to their knowledge never experienced this illness before. The sudden initiation of field hospitals, the presence of a large number of foreigners, and barricaded areas and tents for isolations was frightening and confusing. Many locals believed the sources of Ebolavirus were the clinics establish by the aid effort. In some cases, this lead to attacks on teams, mob riots, and storming of health facilities.(WHO 2015)

Additionally, the burials being conducted by local military and health staff were perceived by locals as undignified. The performance of important rituals that involved touching the bodies of loved ones and dressing the bodies was not permitted.(WHO 2015) Further, mass graves and unmarked graves in non-traditional areas was alarming. Families decided to hide bodies in order to offer proper burials in secret.

2.3.3 Lack of International Assistance

Unlike other recent national crises, the Ebola epidemic did not prompt a large outpouring of donations, supplies, and volunteers. Instead it was not until 9 months into the epidemic that the international community was spurred to action. As a result, the ability to quickly control the epidemic was replaced by overwhelmed health facilities and support personnel. Organizations that normally are not involved in epidemic and disaster relief operations quickly had to learn

how to fill a role in the Ebola Epidemic. A few examples are The United Nations Population Fund (UNFPA) facilitating conducted contact tracing and the international nonprofit Save the Children, which normally focuses on children's health during crisis, learned to manage a health care facility built by the UK government in Sierra Leone.

3.0 METHODS

This section describes the methods used to conduct the analysis of the aforementioned research questions and objectives.

3.1 DESCRIPTION OF GRANT PROCESSES

To date there have been three rounds of grants. When a grant deadline was announced, steering committee members were tasked with the responsibility of reaching out to RPCVs and other contacts that work in West Africa to notify them of the available grant. A formal request for proposals was published in both English and French for each round and given to the steering committee members, as well as posted to the NPCA and ERF websites. Applications forms were also disseminated using the same methods.

After the first round, grants were received on a continuous basis. For a grant to be eligible for consideration, the submitting organization was required to submit the grant application, a budget, and proof of nongovernmental organization status in Guinea, Liberia, or Sierra Leone. If a grant was received after the review deadline it was carried over into the following round. Organizations whose proposals were declined in a previous round were also encouraged to resubmit unless there was sufficient doubt on behalf of the steering committee that organization could resubmit a quality proposal. While constructive criticism was not prepared

formally by the steering committee, organizations often requested feedback from members or RPCV contacts that may have referred them.

All grants that were received by the deadline went through a critiquing and vetting phase prior to the final review meeting where funding decisions were made. The Associate Director of Coordination and Analysis conducted the initial review. The purpose of his initial review was to identify proposal strengths, weaknesses, potential for capacity building in the community, and areas of concern or confusion that required further clarification. He also scored each proposal on a scale from 1 to 5, 5 being the strongest. This informal measure became the standard judge of proposal quality for the steering committee over the course of three rounds. The two steering committee members who represented the "Friends of" member group were responsible for contacting organizations via phone or video chat from their respective countries. During these conversations, steering committee members asked for clarification in vague areas as identified by them and the initial review conducted by the Associate Director. They also probed to assess if the organization was reliable and would responsibly use awarded funds.

Organizations awarded grant funds received these funds directly through a bank wire transfer. In Round 1 the organizations were given funds without a requirement to submit reports during the operation of the program. However, organizations were told in the initial application form that a final report prepared by ERF would be required to assess impact upon conclusion. It was mailed to Round 1 organizations around mid-February. During preparation of Round 2, a mid-term assessment form was developed to assess organizations' progress in round 2 and subsequent rounds. A mid-term date was tracked for each grant in Round 2 and the reported was emailed on that date, which for most occurred at the end of February through mid-March. Final reports were sent similarly on the programs reported end date. Organizations were always asked

to submit mid-term and final reports within 2 weeks of receiving the report template. Round 3 funds were being wire transferred at the time of this report, therefore did not have reports to submit for analysis.

3.2 DATA COLLECTION

Data utilized for this analysis were the initial grant reviews completed by the Associate Director and mid-term and final evaluation forms submitted by the organizations. Due to the real-time perspective of the analysis for objective 4, news articles from credible sources were utilized to conduct the analysis.

A comprehensive search of news articles and reports published between February 1, 2015 and April 1, 2015 was conducted. Based on reports issued throughout the epidemic, Reuters and the New York Times articles were frequently cited by list serves and other news outlets. Articles were considered to be relevant if they discussed the current status of the Ebola outbreak in one or a combination of the three most affected countries, Guinea, Liberia, and Sierra Leone. Articles were discarded if they did not contain information that addressed the current burden of case, important developments in relief organizations and governments' abilities to control the epidemic, or changes in laws or containment practices as a result of changes in the Ebola epidemic.

3.3 DATA ANALYSIS

Objective 1 was assessed using the initial review comments prepared by the Associate Director. A qualitative analysis was used to assess the overall quality as measured by the initial scores assigned to each grant and the areas of weakness identified for each grant. Feedback after each round was given to the Associate Director by the committee members regarding the accuracy of the comments. In most cases, the scores and comments were perceived as extremely accurate by the steering committee members doing the vetting and final decision-making. This form of documentation did suffice to represent the views of the NPCA regarding the quality of grants received. The scores of the grants funded were compared to the grants not funded to assess the distribution of quality throughout the pool and types of weaknesses that separate funded form unfunded grants. The frequency at which weaknesses were noticed were documented in order to identify potential areas for improvement in the grants received in possible future rounds.

Objective 2 was assessed using the mid-term and final reports collected from Round 1 and Round 2 organizations. The activities described in the report were compared to the original budget and grant application to evaluate if grant funds were used as originally requested. The compliance was categorically reported as noncompliant, partially compliant, or compliant for each grant.

Objective 3 used the outcomes stated in final reports and process measures reported in mid-term reports to conduct a basic assessment of organizations' overall impact. Quantitative measures such as number of people educated, households reached, and volunteers trained, etc. were measured based on a percentage of completion by comparing the observed numbers reported in final and mid-term reports to expected numbers listed in grant proposals. Qualitative comments and testimonials stated in reports were used to better understand the successes or

failures of the organizations' programs. Each report asks for descriptive comments regarding successes and failures. Comments to these questions were evaluated for common themes in reporting.

For Objective 4, news articles will be assessed for date of publication, trends in total cases, the dispersion of the cases, the duration of outbreaks, NGO and government response times to outbreaks, and other events, such as cultural events, health campaigns, and laws. A matrix will be constructed to list all of these variables. A qualitative analysis will be conducted to identify themes or trends present in the information reported.

4.0 RESULTS

The NPCA received 100 grants over the course of the 5 months of proposal collection and review. Of those grants, 25 were selected; 7 in Round 1, 9 in Round 2, and 9 in Round 3 (Table 4). A description of the programs funded have been provided in Appendix A. The average duration of programs ranged from one week to four months, with the majority of programs planned to last one to two month. For Round 1, while 7 proposals were selected only 6 replied with banking information. After many repeated attempts to reach out to the seventh organization, the ERF canceled the grant and reallocated the funds to future grant rounds. The 6 remaining programs completed their programs between January and February of 2015. All groups submitted final reports.

Round 2 funded 9 proposals in collaboration with the nonprofit charitable organization World Connect. Six organization received funds with the initial wire transfer and three organizations were still working with their local banks and NPCA to troubleshoot transfer issues as of March 26th, 2015. Of the six Round 2 proposals that received funding, the midpoint of their projects ranged between February 15th and March 24th. To date, six reports have been received from Round 2 organizations in the form of four mid-term and two final report. Three organizations submitted mid-term reports only, one submitted only a final report due to the one-week duration of their program, and one organization has submitted both a mid-term and final report. The final report was used for this organization in the analysis. Organizations were

expected to submit reports within two weeks of the project midpoint or completion date. Currently, 100% of Round 1 and 2 organizations were compliant with the reporting guidelines. Of the 12 organizations that have received grant money, the ERF has received a report from 11 organizations, either mid-term or final report. The twelfth program's reporting deadline has not yet occurred.

The quality of grants received was sufficient to award all funds for each round to competent organizations with well-written proposals. The ERF was not struggling to find quality grants or taking risks funding poorly written proposals in order to utilize all donations received for that round. The first round contained the highest concentration of high quality grants (Table 5) with the most grants receiving 4s and 5s compared to other rounds. As the rounds progressed, a score of 3 or 2 became the common score of grants rewarded and the unfunded grants had scores ranging from 3 to 1 (Table 6&7). Round 3 did have a large number of highly scored grants. However, three grants, receiving scores of 5, 4, and 3, were resubmitted by organizations that had applied in previous rounds. Furthermore, half the pool was never reviewed due to failure by organizations to comply with stricter inclusion and exclusion criteria. This may indicate that groups with more skill in program design and grant writing had the ability to respond quickly to the initial round. The groups, which applied later, might have needed more time to organize, plan, and write their grants or more mentorship to develop an adequate proposal in the case of the resubmits.

The qualitative analysis of grant comments revealed 6 common areas of weakness; budget issues, high human resource costs, lack of explanation, low cost effectiveness, program logic issues, and sustainability issues (Tables 5-7). Budget issues included grants that requested more than the $3000 limit, budgeted for expensive equipment costs that exceeded the length of

the program (computers, cameras, etc.), or planned to spend funds on items that did not support the program described in the grant. High human resource costs were considered a weakness due to the spirit of collaboration and capacity building in the community. Programs in developing world communities tend to perform better if there is community "buy-in" in the form of financial contribution to the project or in-kind donations by way of volunteering time, material donations, etc. Therefore, grants that did not offer financial contributions and used greater than 30% of the budget to pay coordinators or "volunteers" were scored lower for risk that salaries and per diems would be paid but little work would occur.

Lack of explanation was the most common issue with grants. Many grants were well written, however, a detailed explanation of how the program would be organized and managed was lacking, often to the point where reviewers were uncomfortable funding the project. Additionally, to a lesser extent in programs that requested the $3000 limit yet delivered services to very few people in comparison to similar projects were critiqued as having low cost-effectiveness. Program logic issues were given to grants that had incongruences between the needs statement, program goal, program description, and impact evaluation sections in the application. Also, this label was used if there was doubt that methods proposed would adequately address the needs as described the grant. Finally, sustainability and capacity building are major foci for Peace Corps and the ERF placed sustainability and capacity building at the forefront of their grant selection. If a program only had a short-term effects or did not improve the skills, knowledge, or abilities of the community providing the program, a grant was critiqued as having sustainability issues.

Table 5: Initial Grant Review Results- Round 1

Score	Quantity	Weaknesses
Funded Proposals		
5	4	None*
4	1	High HR Costs
3	1	Sustainability
2	1	High HR Costs
Unfunded Proposals		
5	1	None (Insufficient Funds- Funded Round 2)
4	1	Lack of Explanation
3	6	Lack of Explanation (5); High HR Cost (1); Sustainability (1)
2	13	Budget (5); Lack of Explanation (5); Program Logic (4); High HR Cost (1); Low CE (1);
1	5	Lack of Explanation (2); High HR Cost (2); Program Logic (1); Low CE (1)

Table 6: Initial Grant Review Results- Round 2

Score	Quantity	Weakness
Funded Proposals		
3	5	Lack of Explanation (3); High HR Cost (1); Program Logic (1)
2	3	Lack of Explanation (2); Program Logic (1)
Unfunded Proposals		
3	1	Program Logic
2	5	Lack of Explanation (2); Low CE (2); Program Logic (2); Budget (1); High HR Cost (1); Sustainability (1)
1	7	Lack of Explanation (4); Program Logic (4); High HR Cost (2); Budget (1)

Table 7: Initial Grant Review Results- Round 3

Score	Quantity	Weakness
Funded Proposals		
5	2	None
4	4	Lack of Explanation (4)
3	1	Lack of Explanation; Sustainability
NP*	2	*committee selected
Unfunded Proposals		
3	2	Lack of Explanation; Sustainability
2	5	Budget (4); Lack of Explanation (3); Program Logic (1); Low CE (1); Sustainability
1	2	Program Logic (2); Low CE (1); Sustainability (1)

*NP= Not Preferred Status; A stricter inclusion/exclusion criteria was implemented for Round 3. Grants that met the criteria from Rounds 1 and 2, but failed the new criteria, were kept and labeled NP. They did not receive a thorough review during the initial review round.

The quality of the grants across all three rounds appeared to be sufficient. The largest detraction from the overall grant pool was the lack of explanation, predominantly in the description of the program description. If the NPCA ERF had more funds to award, lower quality

grants could have been brought to a sufficient level by critiquing the proposal writers' descriptions and asking for a quick resubmission. Since funding was not as abundant, the need to coach and counsel grant writers was unnecessary.

The organizations that submitted reports were extremely compliant adhering to the program objectives described in their original goals (Table 8). Most organizations submitted budget justifications in their final reports showing exactly where funds were spent. All organizations reported utilizing all of the grant funds received. However, there were three anomalies witnessed in the area of compliance. The first was reported by grant 1 regarding the number of community education sessions held (Table 8). They originally proposed to present 10 educational sessions a month to the community at large, but had to reduce presentations to twice per month. Due to an increase in the number of Ebola cases in the organizations' community, trained members needed to focus on food security and maintaining community gardens became a priority. While this is an unfortunate set back, the needs of the individual group members to survive the epidemic is justifiable.

The second issue found was one organization failed to report the impact of their theatre productions on the intended communities stated in the grant. The organization labeled grant 6 (Table 8) has been contacted and more information is expected to be reported, however, not by the time of publishing this evaluation. Hopefully more descriptive information of their efforts is received. Lastly, grant 8 did something no other organization did, which was expanding services based on the changing need of the community (Table 9). They added educating male Ebola survivors about the risks of sexual transmission of Ebola to their educational programming. While this is not compliant with the original proposal, it is important to note the adaptability of

the organization in tailoring their message to community members as new information became available during their program.

The ability of organizations to meet their original goals was also high. The vast majority of process measures indicated at least 100% success in meeting their goals (Table 8). The organizations that submitted reports at the midpoint of their projects also reported all measures being at or beyond 50% completion (Table 9). Not only did the organizations awarded grants use the funds in the way that was proposed, they also demonstrated a high level of success meeting their program goals. While it is hard to determine the true impact of the programs because very few organizations reported mid or long term outcomes, such as change in population behavior or decrease in Ebola cases attributed specifically to their actions, it might be assumed that their actions played at least a role in Ebola prevention or quality of life enhancement in their communities.

Table 8: Reported Results of Completed Projects

Grant	Proposed Activities	Expected Results	Reported Results	Success Rate	Compliance
1	Train Volunteer Community Educators	35 Volunteers trained	32 trained	91%	Compliant
	House to House education	750 Houses visited (7500 ppl)	1300	17%	Partially compliant
	Distribute sanitation kits	100 sanitation kits distributed	800	800%	Compliant
	Conducted community education sessions	40 education sessions conducted	40	100%	Compliant
2	Train WASH Committee Members as Ebola Health Education	Train 50 WASH Committee Members	50	100%	Compliant
	Train volunteers to conduct education	Train 450 volunteers	370	82%	Compliant
	Educate local residents across 8 districts	Reach 25,000 residents	+25000	100%	Compliant
	Supply local health facilities with sanitation supplies	Supply 19 local hospitals	19	100%	Compliant
3	Establish supportive homes	30 homes	30	100%	Compliant
	Support Orphans	110-125 children	115	92%	Compliant
	Supply homes with food for 3 months	Supply homes for 90 days	45	50%	Compliant
4	Purchase radios and supplies	Purchases 175 radios with batteries; 27 sets of school supplies	175 radio sets; 27 school supplies	100%	Compliant
	Distribute radios to surrounding communities	Distribute supplies to 27 area communities	27	100%	Compliant
	Enable children to listen to educational broadcasts	Grant 1050 children access to radio broadcasts	1050	100%	Compliant
5	Increase service provision in 10 communities	10 communities reached	>7 (Gibi District and 6 other communities)	70-100%	Compliant
	Assist local people with food and sanitation supplies	300 community members supported	1000 people	333%	Compliant

Table 8 Continued

6	Recruit and train youth to present educational theatre productions	200 youth recruited and trained	219 trained	109%	Compliant
	Conduct theatre presentations	*unspecified*	*unreported*	*unknown*	*Unknown*
	Educate community members about Ebola	Educate 20,000 community members	*unreported*	*unknown*	*Unknown*
7	Educate Pregnant and breastfeeding women about Ebola	Educate 1000 women	1026 pregnant women; 1073 breastfeeding women	210%	Compliant
	Distribute cleaning kits	Distribute 2000 cleaning kits	1400 kits	70%	Compliant
8	Recruit/Train team leaders	Recruit 8 team leaders	5	63%	Compliant
	Train Volunteers Educators	Educated 50 volunteers	42	84%	Compliant
	Distribute Sanitation kits to impoverished	Distribute 76 kits	100	132%	Compliant
	Educate households	*unspecified*	7460 households		Compliant

Table 9: Reported Results from Ongoing Projects

Grant	Proposed Activities	Expected Results	Reported Results	Success Rate	Compliance
9	Train 13 volunteer educators	13 volunteers trained	28	215% (Finished)	Compliant
	Provide educational services in local communities	Reach 8 communities	6 communities	75% (ongoing)	Compliant
	Educate children about Ebola	Educate 400 children	275	69% (ongoing)	Compliant
	Educate Women about Ebola	Educate 200 women	104	52% (ongoing)	Compliant
			53 male Ebola survivors educated about Ebola sexual transmission		Non-Compliant
10	Door to Door Education campaign	Reach 1500	1200	80% (ongoing)	Compliant
	Deliver cleaning supplies to village households	Serve 7000 ppl	7000	100% (Finished)	Compliant
	Routinely call CHWs and gather reports	Each CHW called weekly	*90% (Absolute quantitative data not reported)*	90% (Ongoing)	Compliant
	Prepare biweekly reports to inform decision making	Prepare 6 biweekly reports	4	66% (ongoing)	Compliant
11	Train volunteers in Ebola Education/Promotion	30 trained	30	100%	Compliant
	Educate surrounding villages	10 villages receive services	10	100%	Compliant
	Reach 350 households	350	350+	100%+	Compliant
	Distribute 50 sanitation kits	50	100	200%	Compliant

Qualitative assessment of the comments provided in the report have revealed a few common themes in the impact these organizations have had on their communities and the issues they had to overcome to deliver the proposed programs. First, three of the eight final reports received stated by the end of their programs the areas they served were Ebola free. While these groups may have been working in tandem with other organizations, their efforts in the area of Ebola awareness and education had to play a part in this victory for their communities. Most

notably, one program operated in the original epicenter of the Sierra Leone outbreak, the six villages of Kailahun. Additionally, another program that distributed 850 radios, of which ERF purchased 175, attributed the absence of Ebola cases in their area throughout the outbreak to the increased community access to government news and educational messages about Ebola. While the original intention was to provide access to primary and secondary school education broadcasts due to school closures, the radios increased the communities' access to other government programs, mainly Ebola health education and news updates, which may have increased communities' awareness and knowledge of Ebola.

Another trend reported was programs successfully broke through communities' fear of Ebola over the course of their efforts allowing them to deliver important educational messages and conduct contract tracing. While it was not elaborated on whether this was unique to ERF funded organizations operating in the area or this was a general trend noticed by all organizations conducting work in the same area, it was an important step to overcoming one of the largest barriers to the relief effort, community resistance. One of the groups that stated they were able to gain community trust and break through hostility was operating in the community of Forecariah, Guinea, where violent riots broke out in October against foreign aid workers.(WHO 2015)

The weaknesses commonly reported were similar to that of reports written by foreign organizations operating in the area. Most groups reported logistical issues to delivering their programs. The distances needed to travel to rural areas or the general quality of roads, the ability to communicate via mobile phones, and delays and problems clearing checkpoints were all issues reported. This seems no different than foreign aid reported programs,(WHO 2015) which may indicate that local groups funded by ERF were at least operating their programs at a similar level of efficiency as foreign aid groups.

Analysis of news sources (Appendix B) indicated a few trends, which will be discussed by country. Guinea continues to struggle with controlling the Ebola outbreak. Resistance is still high with violent displays of resistance occurring in mid-February and family members still hiding cases and bodies. Currently, a new wave of cases has been reported by the government and is growing in western Guinea and in and around the capital.(O'Carroll 2015, Samb S and Farge E 2015) In Liberia, the case is extremely different. On February 20, the government announced the end of the curfew and plans to reopen the borders.(J 2015) The last case was believed to have resolved on March 5 when Liberia was nearing its 42 non-infectious milestone to be declared Ebola free.(Giahyue JH 2015) A new case was reported on March 20, when a woman was admitted due to a believed exposure through sexual transmission with an Ebola survivor.(Giahyue JH, Flynn D et al. 2015) To date no additional cases have been discovered in country.

Sierra Leone, while progressing better than Guinea, is still aggressively pursuing cases. On March 19 the government announced they will begin door-to-door campaigns in the north and west regions where case counts are still high.(Fofana U 2015) On March 31, door-to-door investigators discovered 173 sick individuals during a three-day lockdown of the country in Freetown meeting the case definition of Ebola.(Fofana U 2015) The entire country had an increase in 50% of reported number of sick cases. However, it is worth noting the Sierra Leone government announced on April 1 that they have begun planning to lay off health workers.(Fofana U 2015)

Overall, it appears that the Ebola epidemic is waning. Liberia is almost cleared of cases, Sierra Leone appears to have sufficient resources and capability to launch country wide door-to-door education and contact tracing campaigns while preparing to lay off health staff. Guinea is

the only country that appears to be in need of Ebola aid. However, the ability of NPCA ERF to reach out to the communities who are hiding cases, solicit high quality grants, and submit resources to these organizations before government and NGO organizations respond seems unlikely. Further, the description of geographic dispersal of Ebola cases has been stated at regional and county levels. The ability of the ERF to assess specific need of smaller areas and villages seems to be difficult with the current information available. Most maps and infographics have not been updated since January.

5.0 DISCUSSION SECTION

The goal of this section is to discuss the implications of the results described in the previous section. Additionally, the overall strengths and weaknesses of the ERF model of aid based on the literature review and analysis of the grants will be reflected on. Lessons learned will be discussed, as well as appropriate uses of this model for the future.

5.1 EBOLA RELIEF FUND STRENGTHS

When Ebola stricken countries and the WHO were requesting aid in September, the ERF was able to mobilize and deliver an initial disbursement directly into the hands of affected country nationals in approximately 45 days form the organization's first meeting. Furthermore, 4 of the 6 grants funded in that first round have stated they believe their efforts had either greatly assisted in reducing the case burden in the area to zero or preventing the occurrence of new cases altogether. It is that fact alone that makes this structure of aid relief notable. The first strength worth recognizing is the relative ease of management. The majority of the work was conducted by a team of 9-10 people, of which 7 were volunteers. However, due to the extensive network of RPCVs and host country contacts, the ERF was able to mobilize countless individuals in the identification, recruitment, and awarding of viable organizations in affected countries.

Since the operation of ERF utilized predominantly a volunteer network, operational costs were not deducted from donations received. 100% of donations received went directly to grant funds to be awarded to affected countries. The lack of large administrative or operation costs allowed the organization to be flexible with its approach to participating in the epidemic. The ERF was not involved with the recruitment, transportation, or support of people in the affected countries or the purchasing, transport, and maintenance of equipment. These areas have been specifically stated as difficult in crisis situations.(Herson M 2005, Ville De Goyet C, Sarmiento JP et al. 2011) The management of those issues had been completed avoided by the method employed by ERF.

Secondly, the trade-off from having “boots on the ground”, is the lack of being able to supervise, monitor, and evaluate the usage of grant funds by selected organizations. However, this report has shown that groups sponsored by the ERF have filled extremely effective and relevant roles in the Ebola relief efforts. While the remaining half of Round 2 and entire Round 3 programs have yet to start and report outcomes, the initial report indicate high levels of success. The methods of soliciting proposals from RPCV recruited organizations and vetting organizations prior to selecting proposals to receive grant funds appears to have eliminated the mismanagement or disappearance of grant funds.

The ERF avoided many pitfalls associated with donating to a relief effort by giving funds directly into local NGOs hands instead of affected governments or other relief organizations participating in the epidemic. First, mismanagement of funds or graft associated with going through government channels is a potential risk. A recent report stated that the Sierra Leone government cannot account for a significant amount of funds provided for Ebola efforts.(Frum

2010, Flynn D 2015) This is a historic problem with another recent example being the mismanagement of funds by Sri Lanka during the 2004 tsunami disaster.(Frum 2010)

Additionally, cash was disbursed to organizations and put to use in the time period of a few days. Had important supplies been purchased and shipped with the funds collected there is a high risk of supplies being delayed in ports during crisis situations.(Herson M 2005, Ville De Goyet C, Sarmiento JP et al. 2011) A common request by aid organizations is to send money, because it keeps supply lanes clear and infuses faltering local economies with currency.(Frum 2010) In October, when the ERF was forming, reports had been made concerning political factions involved with Sierra Leone's ports intentionally delaying the receiving and transportation of supplies in attempt to undermine the ruling party.(Nossiter 2014) By sending cash directly to organizations, we infused approximately $75,000 into local economies through the employment of local community organization staff, purchase and production of health promotional materials, the purchase of local radios, and the renting of equipment to name a few areas.

Donating funds to large relief organizations also does not guarantee your donation will go directly to the cause you would like to support. When RPCV donors with connections to affected countries tried to engage the few large relief organizations participating in the relief effort, the organizations could not guaranteed the money donated to them would be specifically earmarked for their country of interest. While the position of the large relief organizations is completely understandable, the membership served by the NPCA has strong emotional connections and invested interests in the countries that have hosted volunteers. The NPCA was able to rapidly engage members as donors and discover high caliber potential recipients in the form of small NGOs started by PCVs during service and RPCVs after service. The satisfaction of having an

intimate connection with those individuals being served might have enticed donors with a connection to the affected countries or a desire to get involved. One successful group fundraiser was planned in New York City, New York by an individual with no previous connection to the US Peace Corps or NPCA. She planned an event and invited local RPCVs to attend, which is a remarkable occurrence.(Burman E 2014)

A third strength of the method employed by the ERF was the capacity building and empowerment that occurred within the community. Over 1,000 volunteers received some form of training in contact tracing, Ebola education, and experience filling an active role during a large crisis. A quote from one grant highlighted this sentiment perfectly stating "*Sao Allieu, one of the contact tracers in the village of Pujuhun has reported with a great deal of pride that their actions "have probably saved many lives". In the early days, they were called "Witch Hunters" and people chased them away from their houses. But according to Sao, through regular visits and preserving, community members have changed their view of them. They are frequently called upon by leadership and community members to consult on matters of public health."* This was quoted from an organization that was working in Kailahun, the epicenter of the outbreak in Sierra Leone that eliminated most of their cases by January. It is clear in this quote that community members who were involved in this program took pride in their efforts. Not only is this important in the short term goals of ending the Ebola epidemic, but hopefully participants in these programs are trained and empowered to take action in future outbreaks, whether it is Ebola or some other infectious disease.

The acceptance of these organizations compared to programs conducted by foreign aid is hard to determine. Many of the organizations stated they noticed a change in the attitudes and beliefs of their communities towards Ebola over the course of their work. To quote an

organization operating in the hostile area of Forcariah, Guinea, where instances of violence and storming hospitals occurred, the report stated this was their major accomplishment, "*People now discuss Ebola disease openly and take action in their own families and communities. More international institutions have now access to these communities. Ebola treated people are less discriminated and participate efficiently in community outreach events. Communities and authorities now work more closely to combat Ebola. Community members accept now their kids go to school.*" If the majority of this change is related to the organization funded by ERF, it could easily be argued that engaging these groups through funding is an indispensable practice in future epidemics with similar cultural situations.

Lastly, the ability of communities to quickly address their need was infallible. The majority of proposals received focused on health education/promotion or "community sensitization" as often labeled by proposal writers. These proposals were submitted in our first two rounds of submissions. In the second round, grants began to immerge in the area of orphan care, food security for Ebola victims/quarantined families, and to a lesser extent microfinance for widows. These needs have been supported multiple times in news articles and reports issued by aid organizations.(O'Carroll 2015) A major point that has been discovered in this evaluation is that the communities are high capable at identifying the needs of their communities and the ERF's model gave them a means of seeking assistance for areas that might not have been as high of a priority to organizations focusing on immediate concerns, such as primary and secondary prevention of Ebola cases.

5.2 EBOLA RELIEF FUND WEAKNESSES

While the no boots on the ground is perfect for fast, flexible, and low overhead funding of relief efforts in affected countries, it does have its weaknesses. Primarily, it will never replace the main services delivered by large relief organizations. The grants are not large enough to fund capital projects, such as the construction, operation, and supply of an Ebola treatment center, which are essential to the containment and treatment of Ebola. The reports received to date have indicated that ERF funded organizations have filled essential roles in the decrease of Ebola cases in their respective areas and benefitted those worse affected by the devastation of Ebola. However, based on humanitarian reports of previous crises, it is important for the ERF and future manifestations of relief provided by the NPCA to know its role, which is one of supplemental assistance.

The widespread prolonged epidemic appears to have favored this model because of the overwhelming need for community participation, the delay in international aid, the prolonged duration of the outbreak,(WHO 2015) and the application of many low technology interventions (education, surveillance, contact tracing, safe burials, etc). The ERF could identify and sponsor projects spread widely across three countries that may never have been identified by large organizations or have been sufficiently engaged by the organizations' staff or resources due to limitations. Due to the relatively simple technology and training required to participate in an epidemic, many community organizations could be engaged and trained in lieu of supervision and large investment and coordination of technical training. Had this situation demanded higher levels of medical knowledge, other highly technical skills, or involved more guidance our NGOs may not have been up to the necessary tasks. We could easily engage areas of need without meddling in the overall effort being directed by the WHO. However, in future situations this may not be the case.

Additionally, in an epidemic that has limited transmission compared to an infectious airborne agent, we could safely engage a number of people. The relatively low cost of training volunteers to conduct education sessions or contact tracing made our $3,000 grants appropriate for the situation. Proposals later focusing on sustaining orphans and other vulnerable populations with food and shelter greatly decreased the numbers of individuals impacted from thousands to a maximum of 100 in most cases. The amount of donations received and our selected maximum fund limit currently has been unable to cater to larger projects involving construction, food security, or highly technical services requiring staff and equipment.

Lastly, this model has a weakness for limited applicability to all disaster situations. While the Ebola epidemic was tragic and had a huge impact on resident populations, it did not greatly affect the countries' infrastructure in regards to communication, transportation, access to clean water, or shelter. A crucial element of success for the methodology the ERF employed was the ability to contact and communicate with local organizations through telephone, video chat, and email. Not only did the ERF directly contact organizations, but our network of volunteers originally reached out to organizations to alert them of the grant, and the organizations used computers to prepare and submit their applications, which all requires functioning electricity, internet cafes, and internet connections. Furthermore, the organizations we interacted with were already members of a community and well informed of the intricacies of the environment and people they were interacting with to provide programs. In the event of a natural disaster that ruins infrastructure and displaces the local population, it is hard to imagine the ERF model being effective because the local NGOs' staff will most likely be scattered. Employing NGOs from a different part of the country where they are unfamiliar with the devastated area may not be as effective. This model might be best reserved for phenomenon such as epidemics, famines, and

other events that greatly impact communities without radically destabilizing the local infrastructure and displacing the affected people.

5.3 FUTURE DIRECTIONS OF THE EBOLA RELIEF FUND

The ERF steering committee was formed around an equalitarian partnership between the NPCA member groups of Friends of Guinea, Friends of Liberia, and Friends of Sierra Leone. It was the unwritten expectation that the steering committee would attempt to award grant funds equally amongst the three countries. The recent analysis of news articles indicated that equality in fund distribution may no longer be an effective method to utilize grant funds. Liberia's current status of almost declaring their country Ebola free no longer conveys the need for support at the level of severity as that of Guinea and Sierra Leone. If it is the wish of the ERF steering committee to continue to fund projects that directly assist in the prevention and control of Ebola, than the areas from which proposals are received should greatly shrink from countrywide to regional. The areas that are specifically of concern are the western region of Sierra Leone including the capital and the Guinea prefectures of Forecariah, Coyah, Dubreka, Boffa and Kindia, which were just placed under emergency status by the president for 45 days.

The timeline that ERF can respond needs to be assessed as well. On average, the typical funding round took approximately 30-45 days (Table 3) from the release of the request for proposals to the initiation of wire transfers. The fastest turnaround time by the organization occurred in Round 1. In the subsequent rounds, Round 2 was tremendously delayed because the ERF was negotiating a collaborative funding agreement with another grant funding organization and Round 3 was delayed because the staff member responsible for coordinating the banking

transfers departed on a planned two week vacation. The recent headlines give the impression governments are able to plan and implement large campaigns quickly due to the decrease in countrywide caseloads. It may be hard for the ERF to identify strong areas of need, prepare and solicit a request for proposals, and fund organizations before large NGO and government intervention address the outbreak.

If it is the wish of the NPCA, their membership, and the ERF to continue awarding grants and award those grants equally in all three worst affected countries, the focus of the grants may need to change to long-term development. Currently, there is fear of food shortage due to disrupted agriculture practices and a large number of orphans and widows in need of support. The $3000 minimum might need to be increased as mentioned earlier, but investing in agricultural projects, orphanages, or microfinance for families that lost the primary breadwinner could have an important impact in the recovering communities.

5.4 LESSONS LEARNED

If a model similar to the ERF is utilized in the future, there are few areas that could be improved to ensure increased productivity of the organization. First, the engagement of more partnering organizations or entities to assist with the developing of high quality proposals. There was a trend noticed in the grants selected that local NGOs who were either working in collaboration with an entity in the US or were affiliated with a US organization had an increased chance of being funded. While there were some organizations with no affiliation that were funded, overall grants submitted exclusively by local NGOs tended to be lower in quality. The differences were

not great, but objective 1 analysis pointed out the largest issue was the lack of explanation regarding the program proposed.

The ERF in attempt to improve the overall quality of proposals did write a short five page grant writing manual to assist organizations with including important information and organizing that information into a logical flow. However, by the time it was created and translated it was posted one week before the proposal deadline for Round 3. It is hard to determine if that document was used or influence the quality of grants submitted.

In the future, developing a mechanism of grant mentorship may better develop proposals. This would provide grant reviewers with more options and more information to select grants based strongly on need, instead of perceived strength of program delivery. This would require more volunteer involvement in the form of grant mentors. The current steering committee of 10 would be overburdened by the increased role as grant developers and mentors. The other option is limit proposal submission to organizations with US counterparts in order to have a smaller pool of grants of anticipated higher quality. This would require more intense social marketing and outreach conducted by the NPCA staff and ERF members, but it could foreseeably be managed within the current steering committee structure.

The bank transfers were a significant issue regarding time spent communicating with organizations and troubleshooting failed transfers. While this was a very effective method when an organization had banking information available and the transfer worked on the first attempt, the delays in troubleshooting could take up months to correct. On March 26, three organizations that were selected in round 2, which were dispersed in the beginning of January, finally received the funds. The uniqueness of the Ebola epidemic's prolonged duration may allow for those funds to still be useful in the communities. In future events, the window for funds to be effective could

be much smaller. Developing methods for testing bank transfer information prior to selection or establishing a secure secondary method of transferring money needs to be developed if this model is utilized again. Another alternative, is establishing a protocol for canceling the grant if the funds cannot be sent within an established timeframe.

Lastly, while the zero overhead cost was an admirable feat, it was extremely hard to accomplish. After the second round of proposal review, members realized the formidable task of coordinating monitoring and evaluation, as well as, organizing all of the grants received in future rounds. A private donation of $1000 was given to the NPCA in order to provide a consulting contract to someone to formally manage those aspects of the ERF. It was realized at that point the importance of having a professional in the health field to review grants, design monitoring and evaluation documents, and conduct the collection and analysis of reports. Additional tasks in the area of fundraising and donor management were very burdensome to the staff of the NPCA. An additional person to review and update the committee on grants received, promote and market the existence of the ERF to donors, seek collaborative relationships with other funding entities, and to ensure timely bank transfers with organizations would have been indispensable. Using donor funds to reimburse one or more individuals in the management of the grant administration process and the “institutional development” of the fund may greatly increase the efficiency and effectiveness of the process, as well as the magnitude of reach the relief fund has.

5.5 LIMITATIONS

The ability of the ERF to thoroughly evaluate the operations and outcomes of organizations awarded grants was extremely limited. Due to the remote nature of the funding and the abilities

of the organizations funded, requiring organizations to justify expenditures with receipts and thorough monitoring and evaluation forms that document all of their work was extremely difficult. The ERF did not have the human resources to create or process extensive report forms. The equipment and abilities of organizations to make thorough reports using MS excel or other statistical packages was also suspect. The best form of justification for program delivery proof were photographs taken during events. All groups that submitted reports included in this evaluation have submitted photo documentation of their efforts. While the photos provided some insurances, all reported numbers and descriptions of program results regarding the use of funds and project impact cannot be proven.

Additionally, the outcome most representative of the organizations work utilized in this report are process measures, which measure the results of the activities conducted by the organization. The development of valid and reliable tools to measure medium term outcomes, such as behavior change or knowledge acquired, would most likely be out of the scope of the community organizations funded or require a lot of time to develop and test measurement tools in a crisis situation. Furthermore, long-term outcomes of reducing the number of Ebola cases in the village were not required due to the complicated task of requiring organizations to design a measurement plan that would account and control for the actions of other organizations operating in the area and government PSAs via many media sources. Due to the fact that Ebola is an uncommon occurrence, data is inherently biased by the phenomenon of regressing to the mean. Therefore, the most reliable data was determined to be process measures when evaluating these grants, which is not ideal but very applicable to this evaluation.

5.6 CONCLUSION

Review of the initial reports received indicate that organizations are utilizing funds effectively and in compliance with their originally proposed activities. The current situation of Ebola in the countries of Guinea, Liberia, and Sierra Leone indicate that if Ebola prevention and control activities continue to be the focus of ERF, then targeted areas should consist of select portions of Guinea and possibly Sierra Leone. If the inclusion criteria remain the same allowing organizations from all areas of Guinea, Liberia, and Sierra Leone to apply, a longer term development focus might be the most effective use of funds. The grant maximum should be increased to allow for larger scale projects.

Overall the model used by the NPCA to provide aid to the countries primarily affected by Ebola seemed very effective under the circumstances of the outbreak. If this model is to be used again in the future, the NPCA should consider crises limited to those that do not disrupt the local communication and banking infrastructure or displaced the local population. Additionally, one or more additional staff members should be hired on a temporary basis to facilitate the recruitment, selection, and evaluation of grants, as well as the activities related to communicating with RPCVs and in-country networks, donor management, disbursement of funds to organizations, and fundraising.

APPENDIX A

GRANTS SELECTED BY ERF STEERING COMMITTEE

The following three documents are press releases prepared by the NPCA to announce the awarding of ERF Round 1-3. A brief program description is available for each organization that received a grant.

The National Peace Corps Association
FOR IMMEDIATE RELEASE
November 17, 2014
PRESS RELEASE
Contact: Erica Burman, news@peacecorpsconnect.org

National Peace Corps Association Awards More Than $20,000 for Community---based Ebola Relief

Seven African grassroots organizations to receive grants

Washington, D.C. – November. 17, 2014—The National Peace Corps Association (NPCA) – a nonprofit organization that champions a lifelong commitment to Peace Corps ideals – announced today that it has awarded seven grants to community-based projects that address Ebola relief in Guinea, Liberia and Sierra Leone. The grants, totaling $20,839, were raised in donations through the NPCA website www.PeaceCorpsConnect.org on behalf of the three Peace Corps countries most affected by the Ebola epidemic in West Africa. This was the first of several rounds of funding as the NPCA pursues a goal of raising $100,000 for Ebola relief.

"The Peace Corps community is uniquely positioned to help identify and support efforts in communities where resources can have significant impact," noted NPCA President Glenn Blumhorst.
Added Russell Morgan, Dr.P.H., Chair of the Ebola Relief Fund Steering Committee, "Together, using modern technology, the affected people in the three countries and the Returned Peace Corps Volunteers who served there have continued to communicate and work at the local community level where the most severe problems exist, and together create practical, sustainable programs for addressing the problems."

Non-profit organizations working in the three countries were invited to propose solutions to Ebola-related issues in their communities. In this first round of awards, three successful proposals were from Guinea, along with two each from Liberia and Sierra Leone. A panel of former Peace Corps Volunteers, some of whom recently returned from the affected countries, reviewed projects. Beneficiaries of the Ebola Relief Funds were:

 Women's Campaign International (WCI) for its Liberian Rural Women's Program, which draws on its existing network of local women leaders to form community action committees at the town and clan level in areas affected by Ebola. Communities have fed quarantined families, paid burial teams to remove bodies and distributed prevention information and materials in a dozen communities. NPCA's award of $3,000 will allow WCI to expand activities to ten more rural communities.

 Face Action Africa is scaling up its efforts to reach communities in remote Rivercess County, Liberia, with its Ebola prevention campaign. With the $3,000 grant from NPCA, it will provide administrative and logistical support to the Rivercess County Health Team, train contact tracers, facilitate the setting up and management of community care centers and the procurement of personal protective equipment for health workers.

 Guinean Association for the Incorporation of Women in the Electoral Process & Governance (AGUIFPEG) in Kindia, Guinea, is mounting a community awareness campaign in an area where an estimated 75 percent of the population is not literate. The project was awarded $3,000 to educate on Ebola prevention through a theatrical presentation in the indigenous languages Soussou, Malinka, Poular and Guerze. Participants will be encouraged to pass on the health information through conversations in their families, bar-cafes, restaurants, markets, fields, mosques, churches and other public places.

 Amis du Monde pour le Developpement (AMD), a community organization in Samoé, Guinea, was awarded $2,839 to create awareness of Ebola prevention practices. Team members will establish an information and intervention system using community leaders to encourage healthier personal hygiène and food preparation.

 Association Guineenne d'Eveil au Developpement Durable (AGEDD), a community organization, was awarded $3,000 to conduct sensitizations for teachers in primary schools and the association of parents of Forecariah and Maferinyah in Guinea. Teachers and parent volunteers will be trained to educate their communities while distributing prevention materials (leaflets, soap, buckets, kettles).

 Action Salone on Health & Education (ASHE) in Eastern Sierra Leone (through **Action Africa, Inc.**) was awarded $3,000 to support the work of Sister Josephine Karmara and a community of nuns in Kailahun in ongoing care of children whose parents died of Ebola. Goals are to provide physical and emotional security to the children, feed and care for them in a home-like environment.

 Schools for Salone, Sierra Leone, was awarded $3,000 to help fill the education gap caused by school closing due to the Ebola epidemic. The project will distribute radios to impoverished communities to allow them access to Ministry of Health daily broadcasts specifically targeting primary school students for three hours in the morning and secondary school students in the afternoon.

Another round of grants will be award in early December.
The NPCA is a 501(c)(3) non-profit organization committed to dispensing 100 percent of money raised to Ebola relief. All contributions are tax-deductible. For more information and to donate, please go to www.NPCAEbolaRelief.org.
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The National Peace Corps Association
FOR IMMEDIATE RELEASE
January 22, 2015
PRESS RELEASE
Contact: Erica Burman, news@peacecorpsconnect.org

NPCA and World Connect Award $26,000 for West African Ebola Relief

Washington, D.C. – Jan. 20, 2015—The National Peace Corps Association (NPCA) – a nonprofit alumni organization that champions a lifelong commitment to Peace Corps ideals – and the New York-based non-profit World Connect have partnered to award nine grants totaling $26,000 to community-based projects that address Ebola relief in Guinea, Liberia and Sierra Leone.
The grants, of up to $3,000 each, will go to organizations in the three West African countries that were hardest hit by the Ebola epidemic, which began in 2014. This was the second round of funding by the NPCA, which raises money from former Peace Corps volunteers and friends. World Connect has worked extensively with Peace Corps volunteers in eighteen developing countries to implement locally-led responsive development initiatives.

Because Peace Corps suspended its programs in the three-Ebola affected countries, former Peace Corps volunteers have spread the news about the grant program through former colleagues and friends in the three countries.

"Our members welcome the opportunity to continue to help the countries in which Peace Corps has served," said NPCA President Glenn Blumhorst. "The community-based approach to educating about Ebola prevention has been the key to checking the spread of this disease."
"There is something unique about the way that Peace Corps Volunteers know the remote communities that many of them consider second homes and that are so vulnerable to disease transmission because of a lack of access to vital resources and services," said World Connect Executive Director Pamela Nathenson. "We believe that these bonds offer important connections that allow us to take action to advance health initiatives in partnership with local leadership."

Community-based non-profit organizations working in the three countries were invited to propose solutions to Ebola-related issues in their areas. Proposals were reviewed by a panel of former Peace Corps volunteers, some of them recently returned from the affected countries. Beneficiaries of this second round of grants from the Ebola Relief Fund were:

In Liberia, the **Bosh Bosh Project Inc.** of Bong County will conduct Ebola prevention, education and general community awareness on Ebola in Salala and surrounding communities in Bong County. This school-based organization, whose female students normally sew products to raise school fees, aims to keep Ebola out of its community, with hand-washing stations and workshops to explain what to do if Ebola is suspected.

The **Liberian Rural Women's Peace and Development Initiative, Inc.** is conducting house-to-house Ebola education in 10 communities in the District of Todee, Montserrado County, distributing flyers on Ebola prevention produced, setting up washing stations in markets and distributing chlorine and buckets to impoverished families. They will air messages in the local languages of Bassa and Kpelle twice daily on radio.

Defence for Children Sierra Leone's mission is to register children affected by Ebola and ensure their access to food, clothing and social services. The group will identify children who are orphaned and facilitate family tracing and reintegration, following national guidelines. They train and support volunteers to provide counseling and moral support to children and families and help curtail stigmatization.

OneVillage Partners aims to build community awareness in six villages in the Kailahun District of eastern Sierra Leone, where two dozen people have died. They have set up an information hotline and they communicate weekly with community health workers in each village to assess the health situation. OneVillage managers relay relevant information on health status and needs to tribal leaders, government and international organizations to mobilize resources.

The Centre for Coordination of Children in Need will continue its work of educating the Gbonko Mayeami community in the Port Loko District of Sierra Leone about the risk of Ebola and how to prevent its transmission by changing some traditional practices. They will train staff and volunteers to conduct an assessment of the needs of women and children affected by the Ebola epidemic and, where necessary, provide emergency resources.

Bien Etre du Mode will identify and label 100 graves of Ebola victims in Macenta, Guinea and create 10 radio broadcasts in Toma Mania and French on the importance of labeling the graves of Ebola victims and to eliminate social and cultural barriers to safe burials.

Priorité Santé Guinée will conduct an Ebola sensitization campaign for pregnant and breastfeeding women in seven health centers around Ratoma. They will train 14 facilitators with a goal of teaching 1,000 clients of the centers how to detect Ebola and give the mothers resources for child care.

L'Association pour le Développement de la Sous Préfecture de Banié will strengthen capabilities of the voluntary Ebola response units and the management of suspected and diagnosed Ebola cases in Yomou, Guinea. They will also establish an information system to alert authorities to new cases, put washing stations in public places, distribute hygiene kits to poor families, conduct a door-to-door awareness campaign.

Association pour Developpement en Milieu Rural's goal is to sensitize the community of Kaliah, Guinea, which has been heavily affected by Ebola, on how the disease is transmitted, how to prevent its spread and the importance of reporting new cases. The group will distribute hygiene kits in the community.

The National Peace Corps Association

FOR IMMEDIATE RELEASE

March 6, 2015

PRESS RELEASE

Contact: Erica Burman, news@peacecorpsconnect.org

National Peace Corps Association Awards New Grants to Community-Based Ebola Relief Efforts

Seven West African grassroots organizations to receive more than $26,000

Washington, D.C. – March 6, 2015 – The National Peace Corps Association (NPCA) announced that it has awarded a third round of grants to community-based projects for Ebola relief in Guinea, Liberia and Sierra Leone. The grants, totaling $26,360, went to nonprofits in the three former Peace Corps countries most affected by the Ebola epidemic in West Africa.

As the number of Ebola cases ebbs, survivors need social support to reintegrate into their communities. Several grants were specifically were awarded for sustainable projects addressing the problems of vulnerable populations, such as pregnant women, orphans and the elderly.

"Former Peace Corps Volunteers who served in Guinea, Sierra Leone and Liberia are acutely aware that the Ebola epidemic is not yet over and that the social and economic consequences will be longstanding," said NPCA President Glenn Blumhorst.

Russell Morgan, Dr.P.H., Chair of the Ebola Relief Fund Steering Committee, said, "We are funding proposals from small community organizations that are dealing with the fallout from this historic epidemic. They are trying to prevent it from happening again by training paraprofessionals to detect health problems early. They are caring for families devastated by Ebola and ensuring that survivors are not stigmatized."

A panel of former Peace Corps Volunteers, some of whom recently returned from the affected countries, reviewed the requests. Groups receiving grants from the Ebola Relief Funds are:

- **Ganta United Methodist Hospital's Nehnwaa Project** will receive $3,000 to train 30 health volunteers from 15 communities in central Liberia to do Ebola awareness through home visitation. The health volunteers, who are residents of the communities, will provide households with Ebola prevention information and materials. They are trained to detect a variety of diseases and to alert the hospital of potential contagion.
- The **Positive Change Women and Girls Initiative** will receive $2,500 to purchase food and clothing for orphans of Ebola victims in Tubmanburg City, Bomi County, Liberia, and hire psychosocial counselors to counsel the orphans' relatives to accept and care for the children. The group will also conduct de-stigmatization campaigns on a local radio station.
- The **King David David Memorial Clinic** in Lunsar, Sierra Leone, will receive $3,000 to train a network of teachers in five villages hard-hit by Ebola to educate students on Ebola prevention and encourage them to take the lessons home to their families. The funds will be also used to produce soap from palm oil, print illustrated materials about Ebola prevention for use in low-literacy homes and buy used clothing for children who have lost their parents. The clinic, which

serves a population of more than 5,000, will train a team of health workers to monitor villages and ensure that prevention activities continue.

- **Community Rights and Development Initiatives**, in western Freetown, Sierra Leone, will receive $2,985 to carry out psychosocial counseling for children orphaned by Ebola, trace their relatives and enable impoverished relatives to find small-scale business activities to help support the children. The group will also engage health workers to monitor pregnant women and ensure their access to prenatal care.
- **Haikal**, Sierra Leone, will receive $3,000 to organize and train community members in detection and screening for potential Ebola cases to prevent future outbreaks. They will engage 25 Ebola survivors to use their experience to help combat the spread of Ebola and provide psychosocial support to Ebola-affected persons through neighborhood watch groups. Haikal will facilitate social mobilization efforts to promote the watch groups through radio discussions and jingles.
- **GCPN dba Restore Hope** will receive $2,875 for its Hope Center for Ebola Orphans in Jui, western Sierra Leone, which will provide shelter and care for 30 children, ages 5-15, who have been orphaned and abandoned as a result of the Ebola virus outbreak. The funds will be used for training of the Hope Center staff and contracting for ongoing trauma counseling services for the orphans. The center will also seek the orphans' relatives and counsel them on the care of children who have lost parents and siblings.
- The **National Organization for Evangelical Works**, Guinea, will receive three separate grants totaling $9,000 for projects in Debelen, Frigulyagbe and Koliagbe, communities that had many Ebola cases and a deep distrust of health workers from outside the area. In each community, the group will train 15 residents to do detection and screening work and give them the equipment necessary to monitor for signs of Ebola cases and alert health authorities at the regional level to any danger of transmission.

Since the creating the Ebola Relief Fund in November 2014, the NPCA has awarded more than $70,000, with a goal of raising $100,000 through its member groups and its website www.PeaceCorpsConnect.org. Another round of grants will be awarded later in the spring.

The NPCA is a 501(c)(3) non-profit organization committed to dispensing 100 percent of money raised to Ebola relief. All contributions are tax-deductible. For more information and to donate, please go to www.NPCAEbolaRelief.org.

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APPENDIX B

OBJECTIVE 4 ANALYSIS

This is the matrix of articles prepared when analyzing the trends in the Ebola epidemic as reported by the media.

Title	Date	Source	Country	Notable Information	Affected Area
Ebola: Sierra Leone Officials Criticize Travel Relaxation	2/3/2015	NYTimes	SL	officials are worried that opening of roads will increase transmission; Countries had reported <100 cases- lowest since June	none
Update 1- Ebola cases on rise for the first time this year, WHO Says	2/4/2015	Reuters	G, L, SL	Cases rising in G, L, SL since beginning of year- G and SL highest burden; Resistance in Guinea high	All 3 countries
Guinea Ebola infections double as hidden cases discovered	2/6/2015	Reuters	G	villages hiding cases; unidentified hot spots	south and western forest region G
Small Rise in New Cases shows Ebola Hanging on	2/6/2015	NYTimes	G,L,SL	Cases increased from 99-124; SL has greatest case burden	all 3 countries
Obama to bring back most US troops fighting Ebola in Africa	2/10/2015	NYTimes	L	Obama announced all 1,300 US troops will be brought home by April 30	none
Update 2- West Africa sees spike in Ebola cases as decline stalls- WHO	2/11/2015	Reuters	G	Guinea cases nearly doubled	Conakry, G
Red Cross Ebola teams in Guinea attached 10 times a month	2/12/2015	NYTimes	G	Red cross reports teams are attached on avg 10 times per month	none

Ebola case prompt min-quarantine in Sierra Leone Capital	2/14/2015	NYTimes	SL	quarantined Freetown fishing district due to at least 5 new cases	Freetown, SL
Liberia reopens dozens of school as Ebola wanes	2/16/2015	Reuters	L	Schools opened in Liberia	none
Liberia schools reopen after 6-month Ebola Closure	2/16/2015	NYTimes	L	students returned to the classroom after 6-month closure	none
Update-1 Ebola cases fall in West Africa, but challenges remain- WHO	2/18/2015	Reuters	G,L,SL	cases decline in all countries, resistance still and issue, G and SL reported unsafe burials	All 3 countries; Freetown, SL specifically
Ebola Risks Linger, Official Warns	2/18/2015	NYTimes	G,L,SL	L has fewer than 5 cases, G and SL reported trending increase	all three countries
Liberia will end Ebola curfew and reopen borders, says president	2/20/2015	Reuters	L	Liberia plans to life nightly curfew and reopen borders; curfew ends Feb 22-borders unknown	none
WHO: Sharp Decline in Ebola Cases has Now Leveled off	2/20/2015	NYTimes	G,L,SL	Consistent decline in cases level of to around 120-150 new cases per week	all 3 countries
Liberia to End Ebola Curfew, Open Land Border Crossing	2/20/2015	NYTimes	L	L president announced end of 9p-6a curfew and borders to open with G and SL; SL cases were 74 and G 52 for past week	G,SL
99 Ebola cases in past week, nearly two-thirds in Sierra Leone	2/25/2015	Reuters	G,L,SL	Case down from previous week; SL accounts for 2/3-L reports 1 case	All 3 countries
Refile- U.S. military ends Ebola mission in Liberia	2/26/2015	Reuters	L	US military ends mission after 5 months- originally planned for 9 to 12months	none
Sierra Leone Registers Rise in New Ebola Cases	2/28/2015	NYTimes	SL	Restrictions reinstated in Sierra Leone in response to increase in new cases from 16 to 18	coastal fishing communities-unspecified
Guinea, Sierra Leone report rise in Ebola in past week, no case in Liberia	3/4/2015	Reuters	G,L,SL	G and SL report 132 new cases- increase of 34 from past week; L reports no cases	G and SL
Liberia releases last know Ebola patient from care	3/5/2015	Reuters	L	Last Ebola case released from hospital in L	none
Last know Ebola patient in Liberia is Discharged	3/5/2015	NYTimes	L	L last Ebola patient was discharged	none
Liberia removes Ebola Crematorium as Outbreak is contained	3/8/2015	NYTimes	L	L dismantled a crematorium	none

Waning interest is biggest risk in race to overcome Ebola- WHO	3/11/2015	Reuters	G,L,SL	Guinea increasing case second week; SL lowest cases since last June; L no cases 20 days	Freetown, SL; Conakry, L
Sierra Leone sees worrying spike in Ebola cases over week	3/12/2015	NYTimes	SL	spike in cases with 15 cases, 16 cases, and 16 cases reported daily within a week	Western SL
Guinea Ebola cases rise, three doctors infected	3/17/2015	Reuters	G	Weekend report shows 21 new cases in 1 day including 3 doctors- spike from daily average of 8	Conakry and Forecariah, G
Guinea Ebola cases rise, three doctors infected	3/17/2015	NYtimes	G	government health report showed 21 cases in 1 day compared to average of 8	Conakry & Forecariah, G
Sierra Leone plans another shutdown to stop Ebola's spread	3/18/2015	NYTimes	SL	30 cases in treatment centers across country; Planning another shutdown March 27-29	SL
Sierra Leone to Lock Down Ebola hotspots next week: officials	3/19/2015	Reuters	SL	Officials planning to lockdown houses and conduct door to door search March 27-29 to identify sick	North and West, SL
Guinea says number of Ebola patients more than doubles since Feb	3/19/2015	Reuters	G	Cases more than double in Guinea since February; officials refer to spike as fourth phase	Forecariah and Coyah
Liberia reports first new case of Ebola in weeks	3/20/2015	Reuters	L	L reports first case in weeks- believed to be sexual transmission from Ebola survivor	Monrovia
Spike in Ebola in Guinea could reflect access to hidden patients	3/20/2015	Reuters	G	Spike in G cases could be explained by villages finally allowing access to patients	G
Liberia Reports First Ebola Case in Weeks	3/21/2015	NYTimes	G	patient tested positive from Ebola-believed to be sexually transmitted- first in two weeks	L
New Ebola infections continue to drop, Guinea still a concern	3/25/2015	Reuters	G,L,SL	G accounts for over half of new cases; SL and L has begun to dismantle surplus treatment centers	G
Health agency reports lowest weekly total of new Ebola cases	3/26/2015	NYTimes	G,L,SL	Lowest new case total in 2015; G 45, L 1, and SL 33	all three countries
Liberia's sole remaining known Ebola patient dies	3/27/2015	Reuters	L	last remaining case dies in treatment center	none
Guinea president announces new emergency measures in Ebola fight	3/28/2015	Reuters	G	President announced new emergency measures enabling authorities to restrict movement in western Guinea	Forecariah, Coyah, Dubreka, Boffa, Kindia

Sierra Leone Ebola lockdown exposes hundreds of suspected cases	3/30/2015	Reuters	SL	three day lockdown finds 235 suspected cases nationwide; 50% increase	Freetown/ Western Region, SL
Guinea: Border closed over Ebola fears	3/30/2015	NYTimes	G	guinea closed border with Sierra Leone as part of the 45 day emergency measures	southwest G
Guinea finds three Ebola cases in the alumina hub of Fria	3/31/2015	Reuters	G	3 cases found in Fria, 2 in Capital, and 1 in each of Dubreka and Forecariah; resistance still an issue	Fria, Conakry, Dubreka, Forecariah
Sierra Leone to start laying of Ebola workers as cases fall: president	4/1/2015	Reuters	SL	President announced authorities would soon begin laying of health workers	none
10 Ebola cases found during Sierra Leone's Shutdown	4/1/2015	NYTimes	SL	10 of the "hundreds' of sick people found in 3 day lock down tested positive for Ebola	SL

BIBLIOGRAPHY

Arata AA and Johnson B (1978). Approaches toward studies on potential reservoirs of viral haemorrhagic fever in southern Sudan (1977). Amsterdam, Elsevier, New-Holland.

Archer N, et al. (2011). "Perspective: postearthuake haiti renews the call for global health training in meidcal education." Acad Med **86**(7): 889-891.

Baize S, et al. (2002). "Inflammatory responses in Ebola virus-infected patients." Clin Exp Immunol **128**: 163-168.

Baize S, et al. (2014). "Emergence of Zaire Ebola Virus Disease in Guinea." N Engl J Med **371**: 1418-1425.

Berman JG, et al. (1978). The epidemiology of Ebola haemorrhagic fever in Zaire, 1976. Ebola Virus Haemorrhagic Fever. Pattyn SR. Amsterdam, Elsevier/North Holland 103-124.

Burman E (2014, November 21). "New York City Ebola Fundraiser: A Big Hit!" Polygot. Retrieved April 3, 2015, from http://www.peacecorpsconnect.org/2014/11/new-york-city-ebola-fundraiser-a-big-hit/.

Center for Disease Control and Prevention, et al. (2015, March 23). "2014 Ebola Outbreak in West Africa- Outbreak Distribution Map." Ebola (Ebola Virus Disease): 2014 West Africa Outbreak. Retrieved 23 March, 2015, from http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/distribution-map.html.

Center for Disease Control and Prevention, et al. (2015, March 23). "2014 Ebola Outbreak in West Africa- Case Counts." Ebola (Ebola Virus Disease): 2014 West Africa Outbreak. Retrieved March 23, 2015, from http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/case-counts.html.

Center for Disease Control and Prevention, et al. (2015, March 23). "Outbreaks Chronology: Ebola Virus Disease." Ebola (Ebola Virus Disease). Retrieved March 23, 2015, from http://www.cdc.gov/vhf/ebola/outbreaks/history/chronology.html.

Dowell SF, et al. (1999). "Transmission of Ebola haemorrhagic fever: a study of risk factors in family members, Kikwit, Democratic Republic of the Congo, 1995." J Infect Dis **179**(suppl 1): S170-176.

Feldmann H and Geisbert TW (2011). "Ebola haemorrhagic fever." Lancet **377**(9768): 849-862.

Feldmann H, et al. (2004). Filoviridae. Virus Taxonomy: VIIIth report of the international committee on taxonomy of viruses. Fauquet C, Mayo MA, Maniloff J, Desselberger U and Ball LA. London, Elsevier/Academic Press**:** 645-653.

Flynn D (2015, Feb 13). "Sierra Leone failed to properly account for Ebola funds- auditor." Industries. Retrieved April 3 2015, from http://www.reuters.com/article/2015/02/13/health-ebola-audit-idUSL5N0VN52320150213.

Fofana U (2015, March 30). "Sierra Leone Ebola lockdown exposes hundreds of suspected cases." Industries. Retrieved April 3, 2015, from http://www.reuters.com/article/2015/03/30/health-ebola-leone-idUSL6N0WW4EF20150330.

Fofana U (2015, March 19). "Sierra Leone to lock down Ebola hotspots next week- officials." Industries. Retrieved April 3, 2015, from http://www.reuters.com/article/2015/03/19/health-ebola-leone-idUSL6N0WL53S20150319.

Fofana U (2015, April 1). "Sierra Leone to start laying off Ebola workers as cases fall: president." Health. Retrieved April 3, 2015, from http://www.reuters.com/article/2015/04/02/us-health-ebola-leone-idUSKBN0MT01120150402.

Frum, D. (2010, Janurary 19). "Learning lessons from past disasters." Retrieved March 28, 2015, from http://www.cnn.com/2010/OPINION/01/19/frum.aid.risks.benefits/index.html.

Geisbert TW, et al. (2003). "Pathogenesis of Ebola haemorrhagic fever in cynomolgus macaques: evidence that dendritic cells are early and sustained targets of infection." Am J Pathol **163**: 2347-2370.

Geisbert TW, et al. (2003). "Pathogenesis of Ebola haemorrhagic fever in primate models: evidence that haemorrhage is not a direct efect of virus-induced cytolysis of endothelial cells." Am J Pathol **163**: 2371-2382.

Georges-Courbot MC, et al. (1997). "Isolation and phylogenetic characterization of Ebola viruses causing different outbreaks in Gabon." Emerg Infect Dis **3**: 59-62.

Giahyue JH (2015, March 5). "Update 1- Liberia releases last known Ebola patient form care." Industries. Retrieved April 3, 2015, from http://www.reuters.com/article/2015/03/05/health-ebola-liberia-idUSL5N0W74YN20150305.

Giahyue JH, et al. (2015, March 20). "Liberia reports first new case of Ebola in weeks." Health. Retrieved April 3, 2015, from http://www.reuters.com/article/2015/03/20/us-health-ebola-liberia-idUSKBN0MG2AR20150320.

Grabois, A. (2014, November 1). "Trends in Ebola Relief Funding." Philanthropy Front and Center. Retrieved March 23, 2015, from http://newyorkblog.foundationcenter.org/2014/11/trends-in-ebola-relief-funding.html.

Grepin, K. (2015). "International donations to the Ebola virus outbreak: too little, too late?" BMJ **350**(H376).

Groseth A, et al. (2007). "The ecology of Ebola virus." Trends Microbiol **15**: 408-416.

Gupta M, et al. (2004). "Persistent infection with Ebola virus under conditions of partial immunity." J Virol **78**: 958-967.

Hensley LE, et al. (2002). "Proinflammatory response during Ebola virus infection of pirmate models: possible involvement of the tumor necrosis factor receptor superfamily." Immunol Lett **80**: 169-179.

Herson M (2005). Tsunami Real Time Evaluation Synthesis Report, International Federation of Red Cross and Red Crescent Societies.

Hung LS (2003). "The SARS epidemic in Hong Kong: what lessons have we learned?" J R Soc Med **96**: 374-378.

Isaacson M, et al. (1978). Clinical aspects of Ebola virus disease at the Ngaliema hospital, Kinshasa, Zaire, 1976. Ebola Virus Haemorrhagic Fever. Pattyn SR. Amsterdam, Elsevier/North-Holland**:** 15-20.

J, B. (2015, February 20). "Liberia will end Ebola curfew and reopen borders says president." Industries. Retrieved April 3, 2015, from http://www.reuters.com/article/2015/02/20/health-ebola-liberia-idUSL5N0VU4N520150220.

Jose MM (2010). "Cultural, ethical, and spiritual competencies of health care providers responding to a catastrophic event." Crit Care Nurs Clin North Am **22**(4): 455-464.

Kiley MP, et al. (1982). "Flioviridae: a taxonomic home for Marburg and Ebola viruses? Intervirology." J Virol **18**: 24-32.

Kouadio IK, et al. (2012). "Infectious diseases following natural disasters: prevention and control measures." Expert Rev Anti Infect Ther **10**(1): 95-104.

Ksiazek TG, et al. (1999). "ELISA for the detection of antibodies to Ebola virus." J Infect Dis **179**(suppl 1): S192-198.

Leroy EM, et al. (2009). "Human Ebola outbreak resulting from direct exposure to fruit bats in Luebo, Democratic Republic of Congo, 2007." Vector Borne Zoonotic Dis **9**: 723-728.

Leroy EM, et al. (2005). "Fruit bats as reservoirs of Ebola virus." Nature **438**: 575-576.

Levi M (2007). "Disseminated intravascular coagulation." Crit Care Med **35**: 2191-2195.

Medecins Sans Frontieres (2015). Pushed to the Limit and Beyond: A year into the largest ever Ebola outbreak. New York, MSF.

Morvan JM, et al. (1999). "Identification of Ebola virus sequences present as RNA or DNA in organs of terrestrial small mammals of the Central African Republic." Microbes Infect **1**: 1193-1201.

National Peace Corps Association. "About Us." Retrieved March 25, 2015, from http://www.peacecorpsconnect.org/about/.

Nossiter, A. (2014, October 5 2015). "Ebola help for Sierra Leone is nearby, but delayed on the docks." Africa. Retrieved April 5 2015, from http://www.nytimes.com/2014/10/06/world/africa/sierra-leone-ebola-medical-supplies-delayed-docks.html?_r=0.

O'Carroll, L. (2015, March 4). "Ebola 'leaves 12,000 orphans in Sierra Leone'." Global Development. Retrieved April 3, 2015, from http://www.theguardian.com/global-development/2015/mar/04/ebola-leaves-12000-orphans-sierra-leone.

Pourrut X, et al. (2007). "Spatial and temporal patterns of Zaire ebolavirus antibody prevalence in the possible reservoir bat species." J Infect Dis **196**(suppl 2): S176-183.

Rodriquez LL, et al. (1999). "Resistence and genetic stability of Ebola virus during the outbreak in Kikwit, Democratic Republic of the Congo, 1995." J Infect Dis **179**(suppl 1): S170-176.

Rowe AK, et al. (1999). "Clinical, virologic, and immunologic follow-up of convalescent Ebola haemorrhagic feer patients and their household contacts, Kikwit, Democratic Republic of the Congo." J Infect Dis **179**(suppl 1): S28-35.

Samb S and Farge E (2015, March 19). "Guinea says number of Ebola patients more than doubles since Feb." Health. Retrieved April 3, 2015, from http://www.reuters.com/article/2015/03/19/us-health-ebola-guinea-idUSKBN0MF1XG20150319.

Sanchez A, et al. (2006). Filoviridae: Marburg and Ebola viruses. Fields Virology. Knipe DM and Howley PM. Philadelphia, Lippincott Williams & Wilkins.

Schnittler HJ and Feldmann H (1998). "Marburg and Ebola haemorrhagic fevers: does the primary course of infection depend on the accessiblity of organ-specific macrophages?" Clin Infect Dis **27**: 404-406.

Siegert R, et al. (1967). "On the eitology of an unknown human infection originating form monkeys." Dtsch Med Wochenschr **92**: 2341-2343.

Stroher U, et al. (2001). "Infection and activation of monocytes by Marburg and Ebola viruses." J Virol **75**: 11025-11033.

Strong JE, et al. (2006). Filoviruses and arenaviruses. Manual of Molecular and Clinical Laboratory Immunology. Detrick B, Hamilton RG and Folds JD. Herndon, Virginia, ASM Press**:** 774-790.

Strong JE, et al. (2008). "Stimulation of Ebola virus production from persistent infection through activation of the Ras/MAPK pathway. ." Proc Natl Acad Sci USA **105**: 17982-17987.

Swanepoel R, et al. (1996). "Experimental inoculation of plants and animals with Ebola virus." Emerg Infect Dis **2**: 321-325.

Tappero JW and Tauxe RV (2011). "Lessons learned during Public Health Response to Cholera Epidemic in Haiti and the Dominican Republic." Emerg Infect Dis **17**(11): 2987-2093.

United States Peace Corps (2013, November 20). "Fast Facts." About. Retrieved March 25, 2015, from http://www.peacecorps.gov/about/fastfacts/.

United States Peace Corps (2014, October 8). "About Us." Retrieved March 25, 2015, from http://www.peacecorps.gov/about/.

Ville De Goyet C, et al. (2011). Health response to the earth quake in Haiti: Janurary 2010. Washington, DC, Pan American Health Organization.

WHO (1978). "Ebola haemorrhagic fever in Zaire, 1976." Bull World Health Organ **56**: 271-293.

WHO (1978). "Ebola Hemorrhagic Fever in Sudan, 1976." Bull World Health Organ **56**: 247-270.

WHO (2014). "Ebola virus disease." Media centre. Retrieved March 24, 2015, from http://www.who.int/mediacentre/factsheets/fs103/en/.

WHO (2015). Factors that contibuted to undetected spread. One year into the Ebola epidemic, WHO.

WHO (2015). Guinea: The Ebola virus shows its tenacity. One year into the Ebola epidemic, WHO.

WHO (2015). Key events in the WHO response to the Ebola outbreak. One year into the Eboa epidemic, WHO.

WHO (2015). Liberia: A country and its capital are overwhelmed. One year into the Ebola epidemic, WHO.

WHO (2015). Sierra Leone: A Slow start to an outbreak that eventually outpaced all others. One year into the Ebola epidemic, WHO.

WHO (2015, March 23). "Situation Summary: Latest available situation summary, 23 March 2015." Ebola Data and Statistics. Retrieved 23 March, 2015, from http://apps.who.int/gho/data/node.ebola-sitrep.ebola-summary?lang=en.

World Health Organization (2015). Origins of the Ebola Epidemic. One year into the Ebola Epidemic, World Health Organization. **2**.

Zaki SR, et al. (1999). "A novel immunohistochemical assay for the detection of Ebola virus in skin: implications for diagnosis, spread, and surveillance of Ebola Haemorrhagic fever." J Infect Dis **179**(suppl 1): S36-47.

Zhang L, et al. (2012). "Emergency medical rescue efforts after a major earthquate: lessons from the 2008 Wenchuan earthquate." Lancet **379**: 853-861.